

SEQUENCE LISTING

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<120> Optimized Multi-epitope Constructs and Uses Thereof

<130> 2060.0200003

<150> US 60/415,463
<151> 2002-10-03

<150> US 60/419,973
<151> 2002-10-22

<160> 479

<170> PatentIn version 3.2

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<220>
<223> PADRE peptide, HLA Class II supermotif example

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<222> (1)..(1)
<223> May be D- or L-Alanine

<220>
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<222> (3)..(3)
<223> Xaa may be cyclohexylalanine, Phenylalanine or Tyrosine

<220>
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<223> May be D- or L-Alanine

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Ala Lys Xaa Val Ala Ala Trp Thr Leu Lys Ala Ala Ala
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<220>
<223> Spacer peptide

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Gly Pro Gly Pro Gly
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<213> Unknown

<220>

<223> CTL multi-epitope construct

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Phe Leu Leu Ser Leu Gly
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<211> 22

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<213> Unknown

<220>

<223> CTL multi-epitope construct

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Lys Leu Thr Pro Leu Cys
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<213> Unknown

<220>

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<212> PRT

<213> Unknown

<220>

<223> CTL multi-epitope construct

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Val Pro Gly Ser Arg Gly Asp Leu Met Gly Tyr Ile Pro Leu Val Ala
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Lys Phe Val Ala
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<213> Unknown

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<223> Artificial Peptide

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Val Leu Ala Glu Ala Met Ser Gln Val
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<213> Unknown

<220>

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<213> Hepatitis B Virus

<400> 9

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<213> Hepatitis B Virus

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Phe Leu Leu Thr Arg Ile Leu Thr Ile
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Trp Leu Ser Leu Leu Val Pro Phe Val
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Leu Leu Val Pro Phe Val Gln Trp Phe Val
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Leu Leu Pro Ile Phe Phe Cys Leu Trp Val
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<400> 14

Gly Leu Ser Arg Tyr Val Ala Arg Leu
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Tyr Met Asp Asp Val Val Leu Gly Val
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<210> 16
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<400> 16

Ile Leu Arg Gly Thr Ser Phe Val Tyr Val
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<210> 17
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<400> 18

Ala Leu Met Pro Leu Tyr Ala Cys Ile
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<400> 19

Gly Leu Ser Pro Thr Val Trp Leu Ser Val
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Ser Thr Leu Pro Glu Thr Thr Val Val Arg Arg
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<210> 21
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<213> Hepatitis B Virus

<400> 21

His Thr Leu Trp Lys Ala Gly Ile Leu Tyr Lys
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<213> Hepatitis B Virus

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Thr Leu Trp Lys Ala Gly Ile Leu Tyr Lys
1 5 10

<210> 23

<211> 10

<212> PRT

<213> Hepatitis B Virus

<400> 23

Leu Val Val Asp Phe Ser Gln Phe Ser Arg
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<211> 9

<212> PRT

<213> Hepatitis B Virus

<400> 24

Asn Val Ser Ile Pro Trp Thr His Lys
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<210> 25

<211> 9

<212> PRT

<213> Hepatitis B Virus

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Ser Ala Ile Cys Ser Val Val Arg Arg
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<210> 26

<211> 9

<212> PRT

<213> Hepatitis B Virus

<400> 26

Lys Val Gly Asn Phe Thr Gly Leu Tyr
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<210> 27

<211> 10

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<213> Hepatitis B Virus

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Gln Ala Phe Thr Phe Ser Pro Thr Tyr Lys
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<210> 28
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<400> 28

Leu Pro Ser Asp Phe Phe Pro Ser Val
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<210> 29
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Ile Pro Ile Pro Ser Ser Trp Ala Phe
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Thr Pro Ala Arg Val Thr Gly Gly Val Phe
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<210> 31
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<400> 31

His Pro Ala Ala Met Pro His Leu Leu
1 5

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Tyr Pro Ala Leu Met Pro Leu Tyr Ala
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<210> 33
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<400> 33

Phe Pro His Cys Leu Ala Phe Ser Tyr
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<400> 34

Phe Pro His Cys Leu Ala Phe Ser Tyr Met
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<210> 35
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<213> Hepatitis B Virus

<400> 35

Tyr Pro Ala Leu Met Leu Tyr
1 5

<210> 36
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<400> 36

Tyr Pro Ala Leu Met Pro Leu Tyr Ala Cys Ile
1 5 10

<210> 37
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<400> 37

Trp Met Met Trp Tyr Trp Gly Pro Ser Leu Tyr
1 5 10

<210> 38
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<400> 38

Asp Leu Leu Asp Thr Ala Ser Ala Leu Tyr
1 5 10

<210> 39
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<400> 39

Leu Thr Phe Gly Arg Glu Thr Val Leu Glu Tyr
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<211> 10

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<213> Hepatitis B Virus

<400> 40

His Thr Leu Trp Lys Ala Gly Ile Leu Tyr
1 5 10

<210> 41

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<213> Hepatitis B Virus

<400> 41

Ala Ser Phe Cys Gly Ser Pro Tyr
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<210> 42

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<213> Hepatitis B Virus

<400> 42

Leu Ser Leu Asp Val Ser Ala Ala Phe Tyr
1 5 10

<210> 43

<211> 8

<212> PRT

<213> Hepatitis B Virus

<400> 43

Tyr Ser Leu Asn Phe Met Gly Tyr
1 5

<210> 44

<211> 10

<212> PRT

<213> Hepatitis B Virus

<400> 44

Ile Leu Leu Leu Cys Leu Ile Phe Leu Leu
1 5 10

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<400> 45

Arg Trp Met Cys Leu Arg Arg Phe Ile Ile
1 5 10

<210> 46
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<400> 46

Ser Trp Pro Lys Phe Ala Val Pro Asn Leu
1 5 10

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<400> 47

Arg Phe Ser Trp Leu Ser Leu Leu Val Pro Phe
1 5 10

<210> 48
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Leu Trp Phe His Ile Ser Cys Leu Thr Phe
1 5 10

<210> 49
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<400> 49

Glu Tyr Leu Val Ser Phe Gly Val Trp
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<210> 50
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<400> 50

Ser Phe Cys Gly Ser Pro Tyr Ser Trp
1 5

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<400> 51

Ala Phe Pro His Cys Leu Ala Phe
1 5

<210> 52
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Gly Tyr Pro Ala Leu Met Pro Leu Tyr
1 5

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<400> 53

Lys Tyr Thr Ser Phe Pro Trp Leu Leu
1 5

<210> 54
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<400> 54

Ser Tyr Ile Pro Ser Ala Glu Lys Ile
1 5

<210> 55
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<400> 55

Leu Gln Ser Leu Thr Asn Leu Leu Ser Ser Asn Leu Ser Trp Leu
1 5 10 15

<210> 56
<211> 15
<212> PRT

<213> Hepatitis B Virus

<400> 56

Lys	Gln	Ala	Phe	Thr	Phe	Ser	Pro	Thr	Tyr	Lys	Ala	Phe	Leu	Cys
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<210> 57

<211> 15

<212> PRT

<213> Hepatitis B Virus

<400> 57

Ala	Gly	Phe	Phe	Leu	Leu	Thr	Arg	Ile	Leu	Thr	Ile	Pro	Gln	Ser
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<210> 58

<211> 15

<212> PRT

<213> Hepatitis B Virus

<400> 58

Gly	Thr	Ser	Phe	Val	Tyr	Val	Pro	Ser	Ala	Leu	Asn	Pro	Ala	Asp
1				5					10					15

<210> 59

<211> 20

<212> PRT

<213> Hepatitis B Virus

<400> 59

Val	Ser	Phe	Gly	Val	Trp	Ile	Arg	Thr	Pro	Pro	Ala	Tyr	Arg	Pro	Pro
1				5					10					15	

Asn	Ala	Pro	Ile
			20

<210> 60

<211> 15

<212> PRT

<213> Hepatitis B Virus

<400> 60

Arg	His	Tyr	Leu	His	Thr	Leu	Trp	Lys	Ala	Gly	Ile	Leu	Tyr	Lys
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<210> 61

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<212> PRT

<213> Hepatitis B Virus

<400> 61

Leu Val Pro Phe Val Gln Trp Phe Val Gly Leu Ser Pro Thr Val
1 5 10 15

<210> 62
<211> 15
<212> PRT
<213> Hepatitis B Virus

<400> 62

Leu His Leu Tyr Ser His Pro Ile Ile Leu Gly Phe Arg Lys Ile
1 5 10 15

<210> 63
<211> 15
<212> PRT
<213> Hepatitis B Virus

<400> 63

Pro Phe Leu Leu Ala Gln Phe Thr Ser Ala Ile Cys Ser Val Val
1 5 10 15

<210> 64
<211> 15
<212> PRT
<213> Hepatitis B Virus

<400> 64

Lys Gln Cys Phe Arg Lys Leu Pro Val Asn Arg Pro Ile Asp Trp
1 5 10 15

<210> 65
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<400> 65

Ala Ala Asn Trp Ile Leu Arg Gly Thr Ser Phe Val Tyr Val Pro
1 5 10 15

<210> 66
<211> 20
<212> PRT
<213> Hepatitis B Virus

<400> 66

Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu Leu
1 5 10 15

Met Thr Leu Ala
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<210> 67
<211> 15
<212> PRT
<213> Hepatitis B Virus

<400> 67

Leu Cys Gln Val Phe Ala Asp Ala Thr Pro Thr Gly Trp Gly Leu
1 5 10 15

<210> 68
<211> 15
<212> PRT
<213> Hepatitis B Virus

<400> 68

Glu Ser Arg Leu Val Val Asp Phe Ser Gln Phe Ser Arg Gly Asn
1 5 10 15

<210> 69
<211> 15
<212> PRT
<213> Hepatitis B Virus

<400> 69

Val Gly Pro Leu Thr Val Asn Glu Lys Arg Arg Leu Lys Leu Ile
1 5 10 15

<210> 70
<211> 15
<212> PRT
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<400> 70

Ser Ser Asn Leu Ser Trp Leu Ser Leu Asp Val Ser Ala Ala Phe
1 5 10 15

<210> 71
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ccttggtcc ttaatgccgc cgctagggtt tcatggctga gtctgctagt acctttcaat 180
gcggttttcc cacattgcct agcttttagc tatatgaaag ctgcttttagt cgtggacttt 240
tcacagttta gcagaggagc aatcctgctg ctatgtctga tattccttct aaacgcagca 300
gccacacac tctggaaagc tggatcctt tacaagaaag cctggatgat gtggtattgg 360

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agaatcctga cgattaatgc tgccgccatt ccgatcccaa gttcctgggc attcaaagca 540
gccgcggagt atctgggtttc atttggcgta tggaacctgc caagcgactt ctttccttct 600
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<210> 72
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<212> PRT
<213> Hepatitis B Virus

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<400> 72

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Met Gly Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Leu Trp
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Val Pro Gly Ser Arg Gly Phe Leu Leu Ser Leu Gly Ile His Leu Asn
20           25           30

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```

Ala Ala Ala Lys Tyr Thr Ser Phe Pro Trp Leu Leu Asn Ala Ala Ala
35           40           45

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```

Arg Phe Ser Trp Leu Ser Leu Leu Val Pro Phe Asn Ala Ala Phe Pro
50           55           60

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```

His Cys Leu Ala Phe Ser Tyr Met Lys Ala Ala Leu Val Val Asp Phe
65           70           75           80

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Ser Gln Phe Ser Arg Gly Ala Ile Leu Leu Leu Cys Leu Ile Phe Leu
85           90           95

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Leu	Asn	Ala	Ala	Ala	His	Thr	Leu	Trp	Lys	Ala	Gly	Ile	Leu	Tyr	Lys
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Lys	Ala	Trp	Met	Met	Trp	Tyr	Trp	Gly	Pro	Ser	Leu	Tyr	Lys	Ala	Tyr
		115					120					125			
Pro	Ala	Leu	Met	Pro	Leu	Tyr	Ala	Cys	Ile	Gly	Ala	Ala	Ala	Trp	Leu
	130					135					140				
Ser	Leu	Leu	Val	Pro	Phe	Val	Asn	Ala	Ala	Ala	Gly	Phe	Leu	Leu	Thr
145					150					155					160
Arg	Ile	Leu	Thr	Ile	Asn	Ala	Ala	Ala	Ile	Pro	Ile	Pro	Ser	Ser	Trp
				165					170					175	
Ala	Phe	Lys	Ala	Ala	Ala	Glu	Tyr	Leu	Val	Ser	Phe	Gly	Val	Trp	Asn
			180					185					190		
Leu	Pro	Ser	Asp	Phe	Phe	Pro	Ser	Val	Lys	Ala	Ala	Ala	Phe	Leu	Pro
		195					200					205			
Ser	Asp	Phe	Phe	Pro	Ser	Val	Lys	Ala	Ala	Ala	Asp	Leu	Leu	Asp	Thr
	210					215					220				
Ala	Ser	Ala	Leu	Tyr	Asn	Ser	Trp	Pro	Lys	Phe	Ala	Val	Pro	Asn	Leu
225					230					235					240
Lys	Ala	Ala	Ala	Ser	Ala	Ile	Cys	Ser	Val	Val	Arg	Arg	Lys	Leu	Ser
				245					250					255	
Leu	Asp	Val	Ser	Ala	Ala	Phe	Tyr	Asn	Ala	Ala	Ala	Lys	Phe	Val	Ala
			260					265					270		
Ala	Trp	Thr	Leu	Lys	Ala	Ala	Ala	Lys	Ala	Ala	Asn	Val	Ser	Ile	Pro
		275					280					285			
Trp	Thr	His	Lys	Gly	Ala	Ala	Gly	Leu	Ser	Arg	Tyr	Val	Ala	Arg	Leu
	290				295						300				
Asn	Ala	Ala	Ala	Ser	Thr	Leu	Pro	Glu	Thr	Thr	Val	Val	Arg	Arg	Lys
305					310					315					320
His	Pro	Ala	Ala	Met	Pro	His	Leu	Leu	Lys	Ala	Ala	Ala	Arg	Trp	Met
				325					330					335	
Cys	Leu	Arg	Arg	Phe	Ile	Ile	Asn	Ala	Ser	Phe	Cys	Gly	Ser	Pro	Tyr
			340				345						350		

Lys Ala Ala Tyr Met Asp Asp Val Val Leu Gly Val Asn Ala Leu Trp
355 360 365

Phe His Ile Ser Cys Leu Thr Phe Lys Ala Ala Ala Thr Pro Ala Arg
370 375 380

Val Thr Gly Gly Val Phe Lys Ala Ala Ala Leu Thr Phe Gly Arg Glu
385 390 395 400

Thr Val Leu Glu Tyr Lys Gln Ala Phe Thr Phe Ser Pro Thr Tyr Lys
405 410 415

<210> 73
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<212> DNA
<213> Hepatitis B virus

<400> 73
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ggcaggcact acctgcatac tctgtggaag gcaggaatcc tctataaagg gcccgcccca 180
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agcttcgtct acgtgcccgg gcccggaaca gggaagcagg cttttacctt ctctccact 960
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<210> 74
<211> 344

<212> PRT

<213> Hepatitis B virus

<400> 74

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1 5 10 15

Gly Pro Gly Pro Gly Leu Cys Gln Val Phe Ala Asp Ala Thr Pro Thr
20 25 30

Gly Trp Gly Leu Gly Pro Gly Pro Gly Arg His Tyr Leu His Thr Leu
35 40 45

Trp Lys Ala Gly Ile Leu Tyr Lys Gly Pro Gly Pro Gly Pro His His
50 55 60

Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu Leu Met Thr Leu
65 70 75 80

Ala Gly Pro Gly Pro Gly Glu Ser Arg Leu Val Val Asp Phe Ser Gln
85 90 95

Phe Ser Arg Gly Asn Gly Pro Gly Pro Gly Pro Phe Leu Leu Ala Gln
100 105 110

Phe Thr Ser Ala Ile Cys Ser Val Val Gly Pro Gly Pro Gly Leu Val
115 120 125

Pro Phe Val Gln Trp Phe Val Gly Leu Ser Pro Thr Val Gly Pro Gly
130 135 140

Pro Gly Leu His Leu Tyr Ser His Pro Ile Ile Leu Gly Phe Arg Lys
145 150 155 160

Ile Gly Pro Gly Pro Gly Ser Ser Asn Leu Ser Trp Leu Ser Leu Asp
165 170 175

Val Ser Ala Ala Phe Gly Pro Gly Pro Gly Leu Gln Ser Leu Thr Asn
180 185 190

Leu Leu Ser Ser Asn Leu Ser Trp Leu Gly Pro Gly Pro Gly Ala Gly
195 200 205

Phe Phe Leu Leu Thr Arg Ile Leu Thr Ile Pro Gln Ser Gly Pro Gly
210 215 220

Pro Gly Val Ser Phe Gly Val Trp Ile Arg Thr Pro Pro Ala Tyr Arg

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<210> 75
<211> 12
<212> PRT
<213> Hepatitis B virus
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<400> 75

Gly Ile His Leu Asn Ala Ala Ala Lys Tyr Thr Ser
1 5 10

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<210> 76
<211> 12
<212> PRT
<213> Homo sapiens
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<400> 76

Gly Ile His Leu Asn Met Ala Ala Gly Ser Gly Val
1 5 10

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<210> 77
<211> 12
<212> PRT
<213> Hepatitis B virus
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<400> 77

Pro Trp Leu Leu Asn Ala Ala Ala Arg Phe Ser Trp
1 5 10

<210> 78
<211> 12
<212> PRT
<213> Homo sapiens

<400> 78

Pro Trp Leu Leu Asn Ala Thr Val Glu Glu Asn Ile
1 5 10

<210> 79
<211> 11
<212> PRT
<213> Hepatitis B virus

<400> 79

Leu Val Pro Phe Asn Ala Ala Phe Pro His Cys
1 5 10

<210> 80
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<212> PRT
<213> Homo sapiens

<400> 80

Ser Trp Leu Phe Asp Ala Ala Phe Val His Cys
1 5 10

<210> 81
<211> 11
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<213> Hepatitis B virus

<400> 81

Phe Ser Tyr Met Lys Ala Ala Leu Val Val Asp
1 5 10

<210> 82
<211> 11
<212> PRT
<213> Homo sapiens

<400> 82

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1 5 10

<210> 83
<211> 10
<212> PRT
<213> Hepatitis B virus

<400> 83

Gln Phe Ser Arg Gly Ala Ile Leu Leu Leu
1 5 10

<210> 84
<211> 10
<212> PRT
<213> Homo sapiens

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Thr Phe Ser Arg Ala Ala Ile Leu Leu Ser
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aactgccgt gaacagacct attgattggg gcccggccc tggagcagcc aactggattc 2160
tcaggggaac aagcttcgtc tacgtgccc ggccggacc aggaagcag gcttttacct 2220
tctctccac ttacaaggcc ttctctgtg ggccaggccc cggcgccaag tttgtggcag 2280
catggacct caaagccgct gcctgaggat cctga 2315

<210> 206
<211> 763
<212> PRT
<213> Hepatitis B virus

<400> 206

Met Gly Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Leu Trp
1 5 10 15

Val Pro Gly Ser Arg Gly Phe Leu Leu Ser Leu Gly Ile His Leu Asn
20 25 30

Ala Ala Ala Lys Tyr Thr Ser Phe Pro Trp Leu Leu Asn Ala Ala Ala
35 40 45

Arg Phe Ser Trp Leu Ser Leu Leu Val Pro Phe Asn Ala Ala Phe Pro
50 55 60

His Cys Leu Ala Phe Ser Tyr Met Lys Ala Ala Leu Val Val Asp Phe
65 70 75 80

Ser Gln Phe Ser Arg Gly Ala Ile Leu Leu Leu Cys Leu Ile Phe Leu
85 90 95

Leu Asn Ala Ala Ala His Thr Leu Trp Lys Ala Gly Ile Leu Tyr Lys
100 105 110

Lys Ala Trp Met Met Trp Tyr Trp Gly Pro Ser Leu Tyr Lys Ala Tyr
115 120 125

Pro Ala Leu Met Pro Leu Tyr Ala Cys Ile Gly Ala Ala Ala Trp Leu
130 135 140

Ser Leu Leu Val Pro Phe Val Asn Ala Ala Ala Gly Phe Leu Leu Thr
145 150 155 160

Arg Ile Leu Thr Ile Asn Ala Ala Ala Ile Pro Ile Pro Ser Ser Trp
165 170 175

Ala Phe Lys Ala Ala Ala Glu Tyr Leu Val Ser Phe Gly Val Trp Asn
180 185 190

Leu Pro Ser Asp Phe Phe Pro Ser Val Lys Ala Ala Ala Phe Leu Pro
195 200 205

Ser Asp Phe Phe Pro Ser Val Lys Ala Ala Ala Asp Leu Leu Asp Thr
210 215 220

Ala Ser Ala Leu Tyr Asn Ser Trp Pro Lys Phe Ala Val Pro Asn Leu
225 230 235 240

Lys Ala Ala Ala Ser Ala Ile Cys Ser Val Val Arg Arg Lys Leu Ser
245 250 255

Leu Asp Val Ser Ala Ala Phe Tyr Asn Ala Ala Ala Lys Phe Val Ala
260 265 270

Ala Trp Thr Leu Lys Ala Ala Ala Lys Ala Ala Asn Val Ser Ile Pro
275 280 285

Trp Thr His Lys Gly Ala Ala Gly Leu Ser Arg Tyr Val Ala Arg Leu
290 295 300

Asn Ala Ala Ala Ser Thr Leu Pro Glu Thr Thr Val Val Arg Arg Lys
305 310 315 320

His Pro Ala Ala Met Pro His Leu Leu Lys Ala Ala Ala Arg Trp Met
325 330 335

Cys Leu Arg Arg Phe Ile Ile Asn Ala Ser Phe Cys Gly Ser Pro Tyr
340 345 350

Lys Ala Ala Tyr Met Asp Asp Val Val Leu Gly Val Asn Ala Leu Trp
355 360 365

Phe His Ile Ser Cys Leu Thr Phe Lys Ala Ala Ala Thr Pro Ala Arg
370 375 380

Val Thr Gly Gly Val Phe Lys Ala Ala Ala Leu Thr Phe Gly Arg Glu
385 390 395 400

Thr Val Leu Glu Tyr Lys Gln Ala Phe Thr Phe Ser Pro Thr Tyr Lys
405 410 415

Asn Ala Gly Thr Ser Phe Val Tyr Val Pro Ser Ala Leu Asn Pro Ala
420 425 430

Asp Gly Pro Gly Pro Gly Leu Cys Gln Val Phe Ala Asp Ala Thr Pro
435 440 445

Thr Gly Trp Gly Leu Gly Pro Gly Pro Gly Arg His Tyr Leu His Thr
450 455 460

Leu Trp Lys Ala Gly Ile Leu Tyr Lys Gly Pro Gly Pro Gly Pro His
465 470 475 480

His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu Leu Met Thr
485 490 495

Leu Ala Gly Pro Gly Pro Gly Glu Ser Arg Leu Val Val Asp Phe Ser

500										505										510									
Gln	Phe	Ser	Arg	Gly	Asn	Gly	Pro	Gly	Pro	Gly	Pro	Phe	Leu	Leu	Ala														
		515					520					525																	
Gln	Phe	Thr	Ser	Ala	Ile	Cys	Ser	Val	Val	Gly	Pro	Gly	Pro	Gly	Leu														
		530				535					540																		
Val	Pro	Phe	Val	Gln	Trp	Phe	Val	Gly	Leu	Ser	Pro	Thr	Val	Gly	Pro														
545					550					555						560													
Gly	Pro	Gly	Leu	His	Leu	Tyr	Ser	His	Pro	Ile	Ile	Leu	Gly	Phe	Arg														
				565					570					575															
Lys	Ile	Gly	Pro	Gly	Pro	Gly	Ser	Ser	Asn	Leu	Ser	Trp	Leu	Ser	Leu														
			580					585					590																
Asp	Val	Ser	Ala	Ala	Phe	Gly	Pro	Gly	Pro	Gly	Leu	Gln	Ser	Leu	Thr														
		595					600					605																	
Asn	Leu	Leu	Ser	Ser	Asn	Leu	Ser	Trp	Leu	Gly	Pro	Gly	Pro	Gly	Ala														
	610					615					620																		
Gly	Phe	Phe	Leu	Leu	Thr	Arg	Ile	Leu	Thr	Ile	Pro	Gln	Ser	Gly	Pro														
625					630					635					640														
Gly	Pro	Gly	Val	Ser	Phe	Gly	Val	Trp	Ile	Arg	Thr	Pro	Pro	Ala	Tyr														
			645						650					655															
Arg	Pro	Pro	Asn	Ala	Pro	Ile	Gly	Pro	Gly	Pro	Gly	Val	Gly	Pro	Leu														
			660					665					670																
Thr	Val	Asn	Glu	Lys	Arg	Arg	Leu	Lys	Leu	Ile	Gly	Pro	Gly	Pro	Gly														
		675					680					685																	
Lys	Gln	Cys	Phe	Arg	Lys	Leu	Pro	Val	Asn	Arg	Pro	Ile	Asp	Trp	Gly														
	690					695				700																			
Pro	Gly	Pro	Gly	Ala	Ala	Asn	Trp	Ile	Leu	Arg	Gly	Thr	Ser	Phe	Val														
705					710					715					720														
Tyr	Val	Pro	Gly	Pro	Gly	Pro	Gly	Lys	Gln	Ala	Phe	Thr	Phe	Ser	Pro														
				725					730					735															
Thr	Tyr	Lys	Ala	Phe	Leu	Cys	Gly	Pro	Gly	Pro	Gly	Ala	Lys	Phe	Val														
			740					745					750																

Ala Ala Trp Thr Leu Lys Ala Ala Ala Gly Ser
755 760

<210> 207
<211> 2235
<212> DNA
<213> Hepatitis B virus

<400> 207
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agaggctttc ttctgtccct gggcatccac ctgaacgccg ctgcaaagta caccagcttc 120
ccctggctgc tcaacgccgc tgcccgggtc agctggctgt ccctgtctcg gcccttcaac 180
gcagccttcc cccactgcct ggccttcagc tacatgaaag cagccctggg ggtcgacttc 240
tcccagttca gccgggggagc catcctgtct ctgtgcctga tctttctgct caacgccgct 300
gcccacaccc tgtggaaggc tggcatcctg tacaagaaag cctggatgat gtggtactgg 360
ggaccagcc tgtacaaggc atatccagcc ctgatgcccc tgtacgcctg catcgagct 420
gccgcatggc tgagcctcct ggtgcccttc gtgaacgccg ctgccgggtt cctgctgaca 480
agaatcctga ccatcaacgc cgcagccatt cctatcccct ccagctgggc cttcaaggca 540
gccgccgagt acctggtgag cttcggagtc tggaacctgc ccagcgactt ctttcccagc 600
gtgaaagccg cagccttcct gccctccgac ttctttccca gcgtgaaggc cgcagccgat 660
ctcctggaca ccgctagcgc cctgtacaac agctggccca agttcgccgt gcccacactg 720
aaggccgcag ccagcgccat ctgcagcgtg gtcagacgga agctgtccct cgatgtgagc 780
gccgctttct acaacgccgc cgcaaagttc gtggccgcct ggaccctgaa agccgctgcc 840
aaggcagcca acgtgagcat cccctggacc cacaaaggag ccgcaggact gagccggtat 900
gtggccagac tgaacgccgc tgccagcacc ctgcccagaga ccacagtggg cagacggaag 960
caccgcccg ccctgccccca cctgctgaag gccgcagccc ggtggatgtg cctcagacgg 1020
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gtcctgggag tgaacgcctt ctggttccac atcagctgcc tgaccttcaa agccgctgcc 1140
acaccgcaa gactgaccgg aggcgtgttc aaggctgcag cctgacctt cggccgggag 1200
accgtgctgg agtacaagca ggccttcacc ttcagcccca cctacaagaa cgccggcacc 1260
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caggtgttcg ccgatgccac accaaccgga tggggcctgg gccctggacc cggcagacac 1380
tacctgcata ccctgtggaa ggcaggaatc ctgtacaaag gccccggccc tggaccccat 1440
cacaccgtc tgccggcaggc catcctgtgc tggggcgagc tcatgactct ggcaggaccc 1500
ggccccggcg aatccaggct ggtggtggac tttagccagt tctccagagg caacggaccc 1560

ggcccaggac ccttcctgct cgcccagttc accagcgcca tctgcagcgt ggtcggacct 1620
ggcccaggac tgggtgccctt cgtgcagtgg ttcgtcggcc tcagccccac cgtcggacct 1680
ggccccggcc tgcacctcta cagccaccct atcattctgg gcttcagaaa gatcggacca 1740
ggccccggct ccagcaacct gtccctggctc agcctggacg tcagcgcagc cttcggaccc 1800
ggccctggcc tgcagagcct gaccaacctg ctcagcagca acctcagctg gctgggcccc 1860
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ggaccaggcg tgagcttcgg cgtgtggatt cggactcctc ccgcctacag acccccaaat 1980
gcccccatcg gcccaggacc cggcgtcggc cctctgactg tgaacgagaa gcggagactg 2040
aagctgatcg gccccggacc aggcaaacag tgcttcagga agctccctgt gaacagacct 2100
atcgactggg gccccggacc cggcgcagcc aactggattc tgagaggcac cagcttcgtg 2160
tacgtccctg gaccggcccc tggcaagcaa gccttcacct tcagccccac ctacaaggca 2220
ttcctgtgcg gatag 2235

<210> 208
<211> 744
<212> PRT
<213> Hepatitis B virus

<400> 208

Met Gly Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Leu Trp
1 5 10 15

Val Pro Gly Ser Arg Gly Phe Leu Leu Ser Leu Gly Ile His Leu Asn
20 25 30

Ala Ala Ala Lys Tyr Thr Ser Phe Pro Trp Leu Leu Asn Ala Ala Ala
35 40 45

Arg Phe Ser Trp Leu Ser Leu Leu Val Pro Phe Asn Ala Ala Phe Pro
50 55 60

His Cys Leu Ala Phe Ser Tyr Met Lys Ala Ala Leu Val Val Asp Phe
65 70 75 80

Ser Gln Phe Ser Arg Gly Ala Ile Leu Leu Leu Cys Leu Ile Phe Leu
85 90 95

Leu Asn Ala Ala Ala His Thr Leu Trp Lys Ala Gly Ile Leu Tyr Lys
100 105 110

Lys Ala Trp Met Met Trp Tyr Trp Gly Pro Ser Leu Tyr Lys Ala Tyr
115 120 125

Pro	Ala	Leu	Met	Pro	Leu	Tyr	Ala	Cys	Ile	Gly	Ala	Ala	Ala	Trp	Leu
130						135					140				
Ser	Leu	Leu	Val	Pro	Phe	Val	Asn	Ala	Ala	Ala	Gly	Phe	Leu	Leu	Thr
145					150					155					160
Arg	Ile	Leu	Thr	Ile	Asn	Ala	Ala	Ala	Ile	Pro	Ile	Pro	Ser	Ser	Trp
				165					170					175	
Ala	Phe	Lys	Ala	Ala	Ala	Glu	Tyr	Leu	Val	Ser	Phe	Gly	Val	Trp	Asn
			180					185					190		
Leu	Pro	Ser	Asp	Phe	Phe	Pro	Ser	Val	Lys	Ala	Ala	Ala	Phe	Leu	Pro
		195					200					205			
Ser	Asp	Phe	Phe	Pro	Ser	Val	Lys	Ala	Ala	Ala	Asp	Leu	Leu	Asp	Thr
	210					215					220				
Ala	Ser	Ala	Leu	Tyr	Asn	Ser	Trp	Pro	Lys	Phe	Ala	Val	Pro	Asn	Leu
225					230					235					240
Lys	Ala	Ala	Ala	Ser	Ala	Ile	Cys	Ser	Val	Val	Arg	Arg	Lys	Leu	Ser
				245					250					255	
Leu	Asp	Val	Ser	Ala	Ala	Phe	Tyr	Asn	Ala	Ala	Ala	Lys	Phe	Val	Ala
			260					265					270		
Ala	Trp	Thr	Leu	Lys	Ala	Ala	Ala	Lys	Ala	Ala	Asn	Val	Ser	Ile	Pro
		275					280					285			
Trp	Thr	His	Lys	Gly	Ala	Ala	Gly	Leu	Ser	Arg	Tyr	Val	Ala	Arg	Leu
	290					295					300				
Asn	Ala	Ala	Ala	Ser	Thr	Leu	Pro	Glu	Thr	Thr	Val	Val	Arg	Arg	Lys
305					310					315					320
His	Pro	Ala	Ala	Met	Pro	His	Leu	Leu	Lys	Ala	Ala	Ala	Arg	Trp	Met
				325					330					335	
Cys	Leu	Arg	Arg	Phe	Ile	Ile	Asn	Ala	Ser	Phe	Cys	Gly	Ser	Pro	Tyr
			340					345					350		
Lys	Ala	Ala	Tyr	Met	Asp	Asp	Val	Val	Leu	Gly	Val	Asn	Ala	Leu	Trp
		355					360					365			
Phe	His	Ile	Ser	Cys	Leu	Thr	Phe	Lys	Ala	Ala	Ala	Thr	Pro	Ala	Arg

370		375		380
Val Thr Gly Gly Val Phe Lys Ala Ala Ala Leu Thr Phe Gly Arg Glu				
385		390		395 400
Thr Val Leu Glu Tyr Lys Gln Ala Phe Thr Phe Ser Pro Thr Tyr Lys				
	405		410	415
Asn Ala Gly Thr Ser Phe Val Tyr Val Pro Ser Ala Leu Asn Pro Ala				
	420		425	430
Asp Gly Pro Gly Pro Gly Leu Cys Gln Val Phe Ala Asp Ala Thr Pro				
	435		440	445
Thr Gly Trp Gly Leu Gly Pro Gly Pro Gly Arg His Tyr Leu His Thr				
	450		455	460
Leu Trp Lys Ala Gly Ile Leu Tyr Lys Gly Pro Gly Pro Gly Pro His				
465		470		475 480
His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu Leu Met Thr				
	485		490	495
Leu Ala Gly Pro Gly Pro Gly Glu Ser Arg Leu Val Val Asp Phe Ser				
	500		505	510
Gln Phe Ser Arg Gly Asn Gly Pro Gly Pro Gly Pro Phe Leu Leu Ala				
	515		520	525
Gln Phe Thr Ser Ala Ile Cys Ser Val Val Gly Pro Gly Pro Gly Leu				
	530		535	540
Val Pro Phe Val Gln Trp Phe Val Gly Leu Ser Pro Thr Val Gly Pro				
545		550		555 560
Gly Pro Gly Leu His Leu Tyr Ser His Pro Ile Ile Leu Gly Phe Arg				
	565		570	575
Lys Ile Gly Pro Gly Pro Gly Ser Ser Asn Leu Ser Trp Leu Ser Leu				
	580		585	590
Asp Val Ser Ala Ala Phe Gly Pro Gly Pro Gly Leu Gln Ser Leu Thr				
	595		600	605
Asn Leu Leu Ser Ser Asn Leu Ser Trp Leu Gly Pro Gly Pro Gly Ala				
610		615		620

Gly Phe Phe Leu Leu Thr Arg Ile Leu Thr Ile Pro Gln Ser Gly Pro
625 630 635 640

Gly Pro Gly Val Ser Phe Gly Val Trp Ile Arg Thr Pro Pro Ala Tyr
645 650 655

Arg Pro Pro Asn Ala Pro Ile Gly Pro Gly Pro Gly Val Gly Pro Leu
660 665 670

Thr Val Asn Glu Lys Arg Arg Leu Lys Leu Ile Gly Pro Gly Pro Gly
675 680 685

Lys Gln Cys Phe Arg Lys Leu Pro Val Asn Arg Pro Ile Asp Trp Gly
690 695 700

Pro Gly Pro Gly Ala Ala Asn Trp Ile Leu Arg Gly Thr Ser Phe Val
705 710 715 720

Tyr Val Pro Gly Pro Gly Pro Gly Lys Gln Ala Phe Thr Phe Ser Pro
725 730 735

Thr Tyr Lys Ala Phe Leu Cys Gly
740

<210> 209
<211> 621
<212> DNA
<213> Hepatitis B virus

<400> 209
atgggaatgc aggtgcagat ccagagcctg tttctgctcc tctgtgggt gcccggtcc 60
agaggacaca ccctgtggaa ggccggaatc ctgtataagg ccaagtctgt ggctgcctgg 120
accctgaagg ctgccgttt cctgcctagc gatttctttc ctacgtgtt cctgctgtcc 180
ctgggaatcc acctgtatat ggatgacgtg gtgctgggag tgggactgtc caggtagctg 240
gctaggctgt tctgtctgac cagaatcctg accatctcca ccctgccaga gaccaccgtg 300
gtgaggaggc aggccttcac ctttagccct acctataagt ggctgagcct gctggtgccc 360
tttgtgatcc ctatccctag ctccctgggt ttcaccccag ccagggtgac cggaggagtg 420
tttaagggtg gaaacttcac cggcctgtat ctgcccagcg atttctttcc tagcgtgacc 480
ctgtggaagg ccgggacccg gtacaagaat gtgtccatcc cttggaccca caagctggtg 540
gtggactttt cccagttcag cagatccgct atctgctccg tggtagaggag agctctgatg 600
ccactgtatg cctgtatctg a 621

<210> 210

<211> 206
 <212> PRT
 <213> Hepatitis B virus

<400> 210

Met Gly Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Leu Trp
 1 5 10 15

Val Pro Gly Ser Arg Gly His Thr Leu Trp Lys Ala Gly Ile Leu Tyr
 20 25 30

Lys Ala Lys Phe Val Ala Ala Trp Thr Leu Lys Ala Ala Ala Phe Leu
 35 40 45

Pro Ser Asp Phe Phe Pro Ser Val Phe Leu Leu Ser Leu Gly Ile His
 50 55 60

Leu Tyr Met Asp Asp Val Val Leu Gly Val Gly Leu Ser Arg Tyr Val
 65 70 75 80

Ala Arg Leu Phe Leu Leu Thr Arg Ile Leu Thr Ile Ser Thr Leu Pro
 85 90 95

Glu Thr Thr Val Val Arg Arg Gln Ala Phe Thr Phe Ser Pro Thr Tyr
 100 105 110

Lys Trp Leu Ser Leu Leu Val Pro Phe Val Ile Pro Ile Pro Ser Ser
 115 120 125

Trp Ala Phe Thr Pro Ala Arg Val Thr Gly Gly Val Phe Lys Val Gly
 130 135 140

Asn Phe Thr Gly Leu Tyr Leu Pro Ser Asp Phe Phe Pro Ser Val Thr
 145 150 155 160

Leu Trp Lys Ala Gly Ile Leu Tyr Lys Asn Val Ser Ile Pro Trp Thr
 165 170 175

His Lys Leu Val Val Asp Phe Ser Gln Phe Ser Arg Ser Ala Ile Cys
 180 185 190

Ser Val Val Arg Arg Ala Leu Met Pro Leu Tyr Ala Cys Ile
 195 200 205

<210> 211
 <211> 660
 <212> DNA
 <213> Hepatitis B virus

```

<400> 211
atgggaatgc aggtgcagat ccagagcctg tttctgctcc tcctgtgggt gcccgggtcc      60
agaggacaca ccctgtggaa ggccggaatc ctgtataagg ccaagttcgt ggctgcctgg      120
accctgaagg ctgccgcttt cctgcctagc gatttctttc ctagcgtgaa cttcctgctg      180
tccctgggaa tccacctgta tatggatgac gtgggtgctgg gagtgggact gtccagggtac      240
gtggctaggc tgttcctgct gaccagaatc ctgaccatct ccaccctgcc agagaccacc      300
gtgggtagga ggcaggcctt cacctttagc cctacctata agggagccgc tgccctggctg      360
agcctgctgg tgccctttgt gaatatccct atccctagct cctgggcttt caagacccca      420
gccagggatga ccggaggagt gtttaagggt ggaaacttca ccggcctgta taacctgccc      480
agcgatttct ttcctagcgt gaagaccctg tggaaggccg gaatcctgta caagaatgtg      540
tccatccctt ggaccacaaa gggagccgct ctgggtgggtg acttttccca gttcagcaga      600
aattccgcta tctgctccgt ggtgaggaga gctctgatgc cactgtatgc ctgtatctga      660

```

```

<210> 212
<211> 219
<212> PRT
<213> Hepatitis B virus

```

<400> 212

```

Met Gly Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Leu Trp
1           5           10           15

```

```

Val Pro Gly Ser Arg Gly His Thr Leu Trp Lys Ala Gly Ile Leu Tyr
20           25           30

```

```

Lys Ala Lys Phe Val Ala Ala Trp Thr Leu Lys Ala Ala Ala Phe Leu
35           40           45

```

```

Pro Ser Asp Phe Phe Pro Ser Val Asn Phe Leu Leu Ser Leu Gly Ile
50           55           60

```

```

His Leu Tyr Met Asp Asp Val Val Leu Gly Val Gly Leu Ser Arg Tyr
65           70           75           80

```

```

Val Ala Arg Leu Phe Leu Leu Thr Arg Ile Leu Thr Ile Ser Thr Leu
85           90           95

```

```

Pro Glu Thr Thr Val Val Arg Arg Gln Ala Phe Thr Phe Ser Pro Thr
100          105          110

```

```

Tyr Lys Gly Ala Ala Ala Trp Leu Ser Leu Leu Val Pro Phe Val Asn
115          120          125

```

Ile Pro Ile Pro Ser Ser Trp Ala Phe Lys Thr Pro Ala Arg Val Thr
130 135 140

Gly Gly Val Phe Lys Val Gly Asn Phe Thr Gly Leu Tyr Asn Leu Pro
145 150 155 160

Ser Asp Phe Phe Pro Ser Val Lys Thr Leu Trp Lys Ala Gly Ile Leu
165 170 175

Tyr Lys Asn Val Ser Ile Pro Trp Thr His Lys Gly Ala Ala Leu Val
180 185 190

Val Asp Phe Ser Gln Phe Ser Arg Asn Ser Ala Ile Cys Ser Val Val
195 200 205

Arg Arg Ala Leu Met Pro Leu Tyr Ala Cys Ile
210 215

<210> 213
<211> 9
<212> PRT
<213> Hepatitis B virus

<400> 213

Thr Leu Asn Phe Pro Ile Ser Pro Ile
1 5

<210> 214
<211> 10
<212> PRT
<213> Hepatitis B virus

<400> 214

Ser Leu Leu Asn Ala Thr Asp Ile Ala Val
1 5 10

<210> 215
<211> 10
<212> PRT
<213> Hepatitis B virus

<400> 215

Gln Met Ala Val Phe Ile His Asn Phe Lys
1 5 10

<210> 216
<211> 11
<212> PRT
<213> Hepatitis B virus

<400> 216

Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys
1 5 10

<210> 217

<211> 9

<212> PRT

<213> Hepatitis B virus

<400> 217

Phe Pro Val Arg Pro Gln Val Pro Leu
1 5

<210> 218

<211> 10

<212> PRT

<213> Hepatitis B virus

<400> 218

Tyr Pro Leu Ala Ser Leu Arg Ser Leu Phe
1 5 10

<210> 219

<211> 10

<212> PRT

<213> Hepatitis B virus

<400> 219

Val Ile Tyr Gln Tyr Met Asp Asp Leu Tyr
1 5 10

<210> 220

<211> 9

<212> PRT

<213> Hepatitis B virus

<400> 220

Ile Tyr Gln Glu Pro Phe Lys Asn Leu
1 5

<210> 221

<211> 9

<212> PRT

<213> Hepatitis B virus

<400> 221

Ile Trp Gly Cys Ser Gly Lys Leu Ile
1 5

<210> 222

<211> 4
<212> PRT
<213> Unknown

<220>
<223> Peptide linker

<400> 222

Gly Ala Ala Ala
1

<210> 223
<211> 4
<212> PRT
<213> Unknown

<220>
<223> Peptide linker

<400> 223

Asn Ala Ala Ala
1

<210> 224
<211> 4
<212> PRT
<213> Unknown

<220>
<223> Peptide linker

<400> 224

Lys Ala Ala Ala
1

<210> 225
<211> 277
<212> PRT
<213> Human immunodeficiency virus

<400> 225

Met Gly Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Leu Trp
1 5 10 15

Val Pro Gly Ser Arg Gly Lys Leu Val Gly Lys Leu Asn Trp Ala Gly
20 25 30

Ala Ala Ile Leu Lys Glu Pro Val His Gly Val Asn Ala Ala Cys Pro
35 40 45

Lys Val Ser Phe Glu Pro Ile Lys Ile Pro Ile His Tyr Cys Ala Pro
50 55 60

Ala Lys Ala Lys Phe Val Ala Ala Trp Thr Leu Lys Ala Ala Ala Lys
65 70 75 80

Ala Phe Pro Val Arg Pro Gln Val Pro Leu Gly Ala Ala Lys Leu Thr
85 90 95

Pro Leu Cys Val Thr Leu Gly Ala Ala Ala Val Leu Ala Glu Ala Met
100 105 110

Ser Gln Val Lys Val Tyr Leu Ala Trp Val Pro Ala His Lys Gly Ala
115 120 125

Ala Ala Ala Ile Phe Gln Ser Ser Met Thr Lys Lys Thr Thr Leu Phe
130 135 140

Cys Ala Ser Asp Ala Lys Asn Ile Pro Tyr Asn Pro Gln Ser Gln Gly
145 150 155 160

Val Val Lys His Pro Val His Ala Gly Pro Ile Ala Asn Val Thr Val
165 170 175

Tyr Tyr Gly Val Pro Val Trp Lys Lys Ala Ala Ala Gln Met Ala Val
180 185 190

Phe Ile His Asn Phe Lys Asn Ala Ala Ala Tyr Pro Leu Ala Ser Leu
195 200 205

Arg Ser Leu Phe Asn Leu Thr Phe Gly Trp Cys Phe Lys Leu Asn Arg
210 215 220

Ile Leu Gln Gln Leu Leu Phe Ile Asn Ala Lys Ile Gln Asn Phe Arg
225 230 235 240

Val Tyr Tyr Arg Lys Ala Ala Val Thr Ile Lys Ile Gly Gly Gln Leu
245 250 255

Lys Lys Val Pro Leu Gln Leu Pro Pro Leu Lys Ala Met Thr Asn Asn
260 265 270

Pro Pro Ile Pro Val
275

<210> 226
<211> 834
<212> DNA
<213> Human immunodeficiency virus

```

<400> 226
atgggaatgc aggtgcagat ccagagcctg tttctgctcc tcctgtgggt gcccggatcc      60
agaggaaagc tgggtgggcaa actcaactgg gccggagctg caatcctgaa ggagcccgtc      120
cacgggggtga atgccgcttg ccctaaagtc agcttogaac caattaagat ccccatcat      180
tactgtgcac ctgccaaagc taagtttgtg gccgcttgga ccctcaaggc cgctgcaaaa      240
gccttcccag tgaggcccca ggtgcctctg ggcgccgcta aactcacacc actgtgcgtc      300
actctgggag ccgctgcagt gctggcagag gccatgtccc aagtgaaggt gtatctggct      360
tgggtgccccg ccacaagggt ggccgctgca gccatctttc agtctagcat gaccaagaaa      420
acaactctgt tctgtgcctc cgacgctaag aacatccctt ataatccaca gtctcagggc      480
gtgggtcaagc atcccgtgca cgccggacct attgctaacg tgaccgtgta ctatggggtc      540
ccagtgtgga agaaagccgc tgcacagatg gccgtgttta ttcacaattt caaaaacgcc      600
gctgcatacc ccctcgccag cctgagatcc ctcttcaacc tgacattcgg ctgggtgcttt      660
aagctgaacc ggatcctgca gcaactgctc tttatcaatg ctaaaatcca gaacttcgcg      720
gtctactata ggaaggctgc agtgactatc aaaattggcg gacaactgaa gaaagtgcct      780
ctccagctgc ccctctcaa ggcaatgacc aacaatcccc ctatcccagt ctga          834

```

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<210> 227
<211> 280
<212> PRT
<213> Human immunodeficiency virus

```

<400> 227

```

Met Gly Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Leu Trp
1              5              10              15

```

```

Val Pro Gly Ser Arg Gly Ile Pro Ile His Tyr Cys Ala Pro Ala Lys
20              25              30

```

```

Ala Ala Lys Ile Gln Asn Phe Arg Val Tyr Tyr Arg Lys Ala Ala Val
35              40              45

```

```

Thr Ile Lys Ile Gly Gly Gln Leu Lys Lys Ala Lys Phe Val Ala Ala
50              55              60

```

```

Trp Thr Leu Lys Ala Ala Ala Lys Val Pro Leu Gln Leu Pro Pro Leu
65              70              75              80

```

```

Lys Ala Ile Phe Gln Ser Ser Met Thr Lys Lys Leu Thr Pro Leu Cys
85              90              95

```

```

Val Thr Leu Gly Ala Gln Met Ala Val Phe Ile His Asn Phe Lys Gly

```

100 105 110

Ala Lys Val Tyr Leu Ala Trp Val Pro Ala His Lys Asn Ala Ile Pro
115 120 125

Tyr Asn Pro Gln Ser Gln Gly Val Val Lys Ala Ile Leu Lys Glu Pro
130 135 140

Val His Gly Val Gly Ala Ala Ala Leu Thr Phe Gly Trp Cys Phe Lys
145 150 155 160

Leu Asn Ala Val Leu Ala Glu Ala Met Ser Gln Val Asn Arg Ile Leu
165 170 175

Gln Gln Leu Leu Phe Ile Asn Ala Ala Ala Cys Pro Lys Val Ser Phe
180 185 190

Glu Pro Ile Lys Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys Lys
195 200 205

Ala Ala His Pro Val His Ala Gly Pro Ile Ala Asn Ala Ala Ala Tyr
210 215 220

Pro Leu Ala Ser Leu Arg Ser Leu Phe Asn Ala Ala Ala Thr Thr Leu
225 230 235 240

Phe Cys Ala Ser Asp Ala Lys Asn Lys Leu Val Gly Lys Leu Asn Trp
245 250 255

Ala Asn Ala Ala Ala Phe Pro Val Arg Pro Gln Val Pro Leu Asn Met
260 265 270

Thr Asn Asn Pro Pro Ile Pro Val
275 280

<210> 228
<211> 843
<212> DNA
<213> Human immunodeficiency virus

<400> 228
atgggggatgc aggtgcagat ccagagcctg tttctgctcc tcctgtgggt gcccggatcc 60
agaggaatcc ccattcacta ctgcgcccct gctaaggcag ccaaaatcca gaacttcagg 120
gtgtattaca gaaaggctgc agtcaccatt aaaatcggcg gacaactgaa gaaagccaag 180
tttgtggccg cttggacact caaggccgct gcaaaggctc cactgcagct cccccctctg 240
aaggccatct tccagagctc catgactaag aaactgaccc cactgtgtgt gacactcggg 300

```

gccagatgg ctgtgttcat ccataatttt aaaggcgcca aggtctacct ggcttgggtg      360
ccgcacaca agaacgccat tccttacaat ccacagtctc aaggagtggg caaagctatt      420
ctgaaggagc ccgtgcacgg ggtgggcgcc gctgcactca ctttcggatg gtgctttaaa      480
ctgaacgccg tgctggctga agccatgagc caggtcaatc ggatcctgca gcaactgctc      540
ttcattaacg ccgtgcatg tcctaagggtg tccttcgagc caatcaaagt gaccgtgtat      600
tacgggggtcc ccgtgtggaa gaaagccgct catcctgtcc acgcaggccc aatcgccaac      660
gccgctgcat atccctcgc ctctctgcgc agcctgttta acgccgctgc aacaaccctc      720
ttttgcgcct ccgacgctaa gaataaactg gtgggaaagc tgaactgggc caacgcagct      780
gcattccctg tgaggccaca ggtccccctc aatatgacta acaatcccccc tatcccagtg      840
tga                                                                           843

```

```

<210> 229
<211> 211
<212> PRT
<213> Human immunodeficiency virus

```

```

<400> 229

```

```

Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Trp Val Pro
1           5           10           15

```

```

Gly Ser Arg Gly Lys Leu Val Gly Lys Leu Asn Trp Ala Met Ala Ser
          20           25           30

```

```

Asp Phe Asn Leu Pro Pro Val Ala Ile Phe Gln Ser Ser Met Thr Lys
          35           40           45

```

```

Val Thr Ile Lys Ile Gly Gly Gln Leu Lys Arg Ile Leu Gln Gln Leu
50           55           60

```

```

Leu Phe Ile Met Ala Val Phe Ile His Asn Phe Lys Ile Pro Tyr Asn
65           70           75           80

```

```

Pro Gln Ser Gln Gly Val Val Thr Thr Leu Phe Cys Ala Ser Asp Ala
          85           90           95

```

```

Lys Ile Leu Lys Glu Pro Val His Gly Val Gln Met Ala Val Phe Ile
100           105           110

```

```

His Asn Phe Lys Gly Ala Ala Val Phe Ile His Asn Phe Lys Arg Cys
115           120           125

```

```

Pro Lys Val Ser Phe Glu Pro Ile Lys Ile Gln Asn Phe Arg Val Tyr
130           135           140

```

Tyr Arg Leu Thr Phe Gly Trp Cys Phe Lys Leu Gln Val Pro Leu Arg
145 150 155 160

Pro Met Thr Tyr Lys Met Thr Asn Asn Pro Pro Ile Pro Val Thr Val
165 170 175

Tyr Tyr Gly Val Pro Val Trp Lys Val Leu Ala Glu Ala Met Ser Gln
180 185 190

Val Ile Pro Ile His Tyr Cys Ala Pro Ala Lys Leu Thr Pro Leu Cys
195 200 205

Val Thr Leu
210

<210> 230
<211> 633
<212> DNA
<213> Human immunodeficiency virus

<400> 230
atgcaggtgc agatccagag cctgtttctg ctctctctgt gggtgccccg atccagagga 60
aagctggtgg ggaagctgaa ctgggccatg gccagcgatt tcaacctgcc ccccggtggcc 120
atcttccaga gcagcatgac caaggtgacc atcaagatcg gggggcagct gaagaggatc 180
ctgcagcagc tgctgttcat catggccgtg ttcatccaca acttcaagat cccctacaac 240
ccccagagcc aggggggtgg gaccaccctg ttctgcgcca gcgatgccaa gatcctgaag 300
gagcccgtgc acgggggtgca gatggccgtg ttcatccaca acttcaaggg cgccgccgtg 360
ttcatccaca acttcaagag gtgccccaaag gtgagcttcg agcccatcaa gatccagaac 420
ttcagggtgt actacaggct gaccttcggg tgggtgcttca agctgcaggt gccctgagg 480
cccatgacct acaagatgac caacaacccc cccatccccg tgaccgtgta ctacgggggtg 540
cccgtgtgga aggtgctggc cgaggccatg agccaggtga tccccatcca ctactgcgcc 600
cccgccaagc tgacccccct gtgcgtgacc ctg 633

<210> 231
<211> 585
<212> PRT
<213> Human immunodeficiency virus

<400> 231

Met Gly Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Leu Trp
1 5 10 15

Val Pro Gly Ser Arg Gly Tyr Trp Gln Ala Thr Trp Ile Pro Glu Trp

20					25					30					
Lys	Ala	Ile	Phe	Gln	Ser	Ser	Met	Thr	Lys	Lys	Val	Tyr	Leu	Ala	Trp
	35						40					45			
Val	Pro	Ala	His	Lys	Asn	Ala	Ala	Cys	Pro	Lys	Val	Ser	Phe	Glu	Pro
	50					55					60				
Ile	Lys	His	Pro	Val	His	Ala	Gly	Pro	Ile	Ala	Asn	Leu	Thr	Phe	Gly
65					70					75					80
Trp	Cys	Phe	Lys	Leu	Asn	Lys	Met	Ile	Gly	Gly	Ile	Gly	Gly	Phe	Ile
				85					90					95	
Lys	Phe	Arg	Asp	Tyr	Val	Asp	Arg	Phe	Tyr	Lys	Ala	Ala	Ala	Arg	Ile
			100					105						110	
Leu	Gln	Gln	Leu	Leu	Phe	Ile	Asn	Thr	Thr	Leu	Phe	Cys	Ala	Ser	Asp
		115					120					125			
Ala	Lys	Asn	Gln	Met	Val	His	Gln	Ala	Ile	Ser	Pro	Arg	Gly	Ala	Lys
	130					135					140				
Leu	Val	Gly	Lys	Leu	Asn	Trp	Ala	Gly	Ala	Ala	Ala	Ile	Tyr	Glu	Thr
145					150					155					160
Tyr	Gly	Asp	Thr	Trp	Lys	Ala	Ala	Gln	Val	Pro	Leu	Arg	Pro	Met	Thr
				165					170					175	
Tyr	Lys	Gly	Ala	Ala	Ala	Val	Thr	Val	Leu	Asp	Val	Gly	Asp	Ala	Tyr
			180					185					190		
Asn	Ala	Ala	Ala	Arg	Tyr	Leu	Lys	Asp	Gln	Gln	Leu	Leu	Asn	Thr	Leu
		195					200					205			
Asn	Phe	Pro	Ile	Ser	Pro	Ile	Asn	Met	Thr	Asn	Asn	Pro	Pro	Ile	Pro
	210					215					220				
Val	Asn	Ala	Pro	Tyr	Asn	Thr	Pro	Val	Phe	Ala	Ile	Lys	Ala	Ala	Ala
225					230					235					240
Val	Pro	Leu	Gln	Leu	Pro	Pro	Leu	Lys	Ala	Ala	Ile	Pro	Tyr	Asn	Pro
				245					250					255	
Gln	Ser	Gln	Gly	Val	Val	Lys	Ala	Leu	Leu	Gln	Leu	Thr	Val	Trp	Gly
			260					265					270		

Ile Gly Ala Ala Ile Leu Lys Glu Pro Val His Gly Val Asn Ala Ala
275 280 285

Ala Phe Pro Ile Ser Pro Ile Glu Thr Val Lys Val Trp Lys Glu Ala
290 295 300

Thr Thr Thr Leu Phe Lys Ala Ala Ala Val Thr Ile Lys Ile Gly Gly
305 310 315 320

Gln Leu Lys Lys Ile Tyr Gln Glu Pro Phe Lys Asn Leu Lys Ala Ala
325 330 335

Ala Val Leu Ala Glu Ala Met Ser Gln Val Asn Leu Val Gly Pro Thr
340 345 350

Pro Val Asn Ile Gly Ala Ala Ala Glu Val Asn Ile Val Thr Asp Ser
355 360 365

Gln Tyr Lys Ala Ala Ala Ile Pro Ile His Tyr Cys Ala Pro Ala Lys
370 375 380

Ala Val Ile Tyr Gln Tyr Met Asp Asp Leu Tyr Lys Ala Ala Ala Gln
385 390 395 400

Met Ala Val Phe Ile His Asn Phe Lys Asn Ala Ala Thr Tyr Gln Ile
405 410 415

Tyr Gln Glu Pro Phe Lys Pro Tyr Asn Glu Trp Thr Leu Glu Leu Lys
420 425 430

Ala Lys Ile Gln Asn Phe Arg Val Tyr Tyr Arg Lys Ala Phe Pro Val
435 440 445

Arg Pro Gln Val Pro Leu Gly Ala Ala Ala Ile Trp Gly Cys Ser Gly
450 455 460

Lys Leu Ile Lys Val Met Ile Val Trp Gln Val Asp Arg Asn Ala Ala
465 470 475 480

Lys Ala Ala Cys Trp Trp Ala Gly Ile Lys Ala Lys Phe Val Ala Ala
485 490 495

Trp Thr Leu Lys Ala Ala Ala Lys Leu Thr Pro Leu Cys Val Thr Leu
500 505 510

Asn Ala Ala Met Ala Ser Asp Phe Asn Leu Pro Pro Val Lys Ser Leu
515 520 525

Leu Asn Ala Thr Asp Ile Ala Val Asn Val Thr Val Tyr Tyr Gly Val
530 535 540

Pro Val Trp Lys Lys Ala Ala Ala Ala Ile Ile Arg Ile Leu Gln Gln
545 550 555 560

Leu Lys Arg Ala Met Ala Ser Asp Phe Asn Leu Asn Ala Ala Ala Tyr
565 570 575

Pro Leu Ala Ser Leu Arg Ser Leu Phe
580 585

<210> 232
<211> 1758
<212> DNA
<213> Human immunodeficiency virus

<400> 232
atgggggatgc aggtgcagat ccagagcctg tttctgctcc tcctgtgggt gcccggatct 60
agaggatact ggcaagctac ttggattcca gaatggaaag ctatctttca atcctcaatg 120
acgaagaagg tatacctggc atgggtccca gcacacaaga acgccgcttg cccaaagggtg 180
tcctttgaac ccattaaaca cccagtgcac gcagggccaa tagcgaatth gacattcggg 240
tggtgcttca aactaaacaa aatgatcggc ggcatggag gctttatcaa gtttagagat 300
tacgtggacc gattctataa agccgctgcc cgtatactcc agcagctact attcatcaac 360
accactctct tctgcgcttc agacgctaag aaccaaattg tacaccaagc cataagccct 420
agaggagcca agctcgtagg gaaattaaat tgggcgggtg cagcagcaat ctacgagact 480
tacggcgata cctggaaagc agcccagggt ccgttacgcc caatgaccta taaaggcgca 540
gcagcagtaa cagttctaga tgtaggagac gcttacaacg ctgccgcaag atacctaaaa 600
gatcagcagt tactcaacac actaaatttc ccaattagcc cgataaacat gacaaataac 660
ccaccaattc ccgtcaatgc tccctacaac actccagtat tcgcaatcaa agccgctgct 720
gtccccctgc agctccctcc tctgaaagct gcgatacctt acaaccaca gagccaaggt 780
gttgtcaaag cactgcttca gctaacagtt tggggaattg gtgctgcaat tctaaaagag 840
ccagttcatg gggttaacgc cgcgccttc ccaatcagtc ctattgagac tgtgaaagta 900
tggaagaag ccacaaccac actttttaag gcagccgcag ttacaattaa aatagggggc 960
caacttaaga aaatatacca ggaacctttc aagaatctca aagccgctgc agtgctcgcc 1020
gaggctatgt cacaggtgaa tttggtcgga ccaacacccg taaacatcgg agccgcagcc 1080
gaagtgaaca tagtcaccga ctcacagtac aaagccgctg caatacccat acattattgt 1140
gctcccgcaa aggcgctgat ctatcaatat atggacgacc tgtataaggc cgccgcgcag 1200

atggcagtct ttatccacaa ctttaaaaac gcagctactt atcagatcta ccaggaacca 1260
 ttcaaaccgt acaatgagtg gaccttgga ctaaaggcca aaattcagaa cttcagggta 1320
 tattatagaa aagcatttcc agtgaggccc caggtgcctc tgggtgccgc agcaatatgg 1380
 ggatgttctg gaaaactgat caaggtgatg attgtatggc aagtggacag aaatgcagct 1440
 aaggcagcct gttggtgggc aggtataaaa gcaaagttcg tggcagcatg gacgcttaaa 1500
 gcagccgcaa aactcactec tctctgcgtg acacttaatg cagccatggc ctctgatttc 1560
 aaccttcccc ctgtaaaatc cctgcttaat gcgacagata tcgcagtcaa cgtaacagta 1620
 tattatggcg tgccagtctg gaaaaaagcc gccgcggcca taattcggat actgcagcag 1680
 ctgaaaagag ctatggcgag tgacttcaac ctgaatgcgg ccgcctaccc cttggcatcg 1740
 ttaaggtcac tattttga 1758

<210> 233
 <211> 255
 <212> PRT
 <213> Hepatitis C virus

<400> 233

Met Gly Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Leu Trp
 1 5 10 15

Val Pro Gly Ser Arg Gly Leu Leu Phe Asn Ile Leu Gly Gly Trp Val
 20 25 30

Asp Leu Met Gly Tyr Ile Pro Leu Val Tyr Leu Val Ala Tyr Gln Ala
 35 40 45

Thr Val Ile Leu Ala Gly Tyr Gly Ala Gly Val Arg Leu Ile Val Phe
 50 55 60

Pro Asp Leu Gly Val His Met Trp Asn Phe Ile Ser Gly Ile Tyr Leu
 65 70 75 80

Leu Pro Arg Arg Gly Pro Arg Leu Tyr Leu Val Thr Arg His Ala Asp
 85 90 95

Val Val Leu Val Gly Gly Val Leu Ala Ala Leu Leu Phe Leu Leu Leu
 100 105 110

Ala Asp Ala Phe Leu Leu Leu Ala Asp Ala Arg Val Trp Met Asn Arg
 115 120 125

Leu Ile Ala Phe Ala Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu Ser
 130 135 140

Ala Phe Ser Leu His Ser Tyr Gly Val Ala Gly Ala Leu Val Ala Phe
145 150 155 160

Lys Leu Pro Gly Cys Ser Phe Ser Ile Phe Lys Thr Ser Glu Arg Ser
165 170 175

Gln Pro Arg Leu Ile Phe Cys His Ser Lys Lys Lys Phe Trp Ala Lys
180 185 190

His Met Trp Asn Phe Ile Pro Phe Tyr Gly Lys Ala Ile Arg Met Tyr
195 200 205

Val Gly Gly Val Glu His Arg Gln Leu Phe Thr Phe Ser Pro Arg Arg
210 215 220

Arg Leu Gly Val Arg Ala Thr Arg Lys Val Gly Ile Tyr Leu Leu Pro
225 230 235 240

Asn Arg Ala Lys Phe Val Ala Ala Trp Thr Leu Lys Ala Ala Ala
245 250 255

<210> 234
<211> 747
<212> DNA
<213> Hepatitis C virus

<400> 234
gaattcgccg ccaccatgca ggtgcagatc cagagcctgt ttctgctcct cctgtgggtg 60
cccggatcca gaggactgct gttcaacatc ctgggggggt ggggtggatct gatgggggtac 120
atccccctgg tgtacctggt ggcctaccag gccaccgtga tcctggccgg gtacggggcc 180
ggggtgaggg tgatcgtggt ccccgatctg ggggtgcaca tgtggaactt catcagcggg 240
atctacctgc tgcccaggag aggacctaga ctgtacctgg tgactagaca cgctgatgtg 300
gtgctgggtg gaggagtgtt ggctgctctg ctgtttctgc tgctggctga tgctttcctg 360
ctgctggctg atgctagagt gtggatgaac agactgatcg ctttcgcttg tacatgtgga 420
agctccgacg tgtatctgag cgcttttcagc ctgcacagct acggagtggc tggagctctg 480
gtggctttta agctgcctgg atgtagcttt agcatcttta agaccagcga aagaagccag 540
cctagactga tcttttgtca cagcaagaag aagttttggg ctaagcacat gtggaatttt 600
atccctttct atggaaaggc tatcagaatg tatgtgggag gagtgggaaca cagacagctg 660
tttacattta gccctagaag gagactggga gtgagagcta caagaaaggt gggaatctat 720
ctgctgccta atagatgaaa gcttggg 747

<210> 235
 <211> 281
 <212> PRT
 <213> Hepatitis C virus

<400> 235

Met Gly Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Leu Trp
 1 5 10 15

Val Pro Gly Ser Arg Gly Asp Leu Met Gly Tyr Ile Pro Leu Val Ala
 20 25 30

Lys Phe Val Ala Ala Trp Thr Leu Lys Ala Ala Ala Leu Leu Phe Leu
 35 40 45

Leu Leu Ala Asp Ala Leu Ile Phe Cys His Ser Lys Lys Lys Gln Leu
 50 55 60

Phe Thr Phe Ser Pro Arg Arg Tyr Leu Val Thr Arg His Ala Asp Val
 65 70 75 80

Tyr Leu Leu Pro Arg Arg Gly Pro Arg Leu Cys Thr Cys Gly Ser Ser
 85 90 95

Asp Leu Tyr His Met Trp Asn Phe Ile Ser Gly Ile Phe Trp Ala Lys
 100 105 110

His Met Trp Asn Phe Ala Lys Phe Val Ala Ala Trp Thr Leu Lys Ala
 115 120 125

Ala Ala Ile Leu Ala Gly Tyr Gly Ala Gly Val Tyr Leu Val Ala Tyr
 130 135 140

Gln Ala Thr Val Gly Val Ala Gly Ala Leu Val Ala Phe Lys Ile Pro
 145 150 155 160

Phe Tyr Gly Lys Ala Ile Arg Met Tyr Val Gly Gly Val Glu His Arg
 165 170 175

Val Leu Val Gly Gly Val Leu Ala Ala Phe Leu Leu Leu Ala Asp Ala
 180 185 190

Arg Val Leu Pro Gly Cys Ser Phe Ser Ile Phe Ala Lys Phe Val Ala
 195 200 205

Ala Trp Thr Leu Lys Ala Ala Ala Lys Thr Ser Glu Arg Ser Gln Pro
 210 215 220

Arg Arg Leu Gly Val Arg Ala Thr Arg Lys Arg Leu Ile Val Phe Pro
225 230 235 240

Asp Leu Gly Val Trp Met Asn Arg Leu Ile Ala Phe Ala Leu Ser Ala
245 250 255

Phe Ser Leu His Ser Tyr Leu Leu Phe Asn Ile Leu Gly Gly Trp Val
260 265 270

Val Gly Ile Tyr Leu Leu Pro Asn Arg
275 280

<210> 236
<211> 789
<212> DNA
<213> Hepatitis C virus

<400> 236
gaattcgccg ccaccatggg aatgcagggtg cagatccaga gcctgtttct gctcctcctg 60
tggttgcccc gatccagagg agatctgatg ggatatatcc ctctgggtggc taagtttgtg 120
gctgcttgga cactgaaggc tgctgctctg ctgtttctgc tgctggctga tgetctgatc 180
ttctgtcaca gcaagaagaa gcagctgttt acatttagcc caagaagata tctgggtgaca 240
agacacgctg atgtgtatct gctgcctaga cgcggaccta gactgtgtac atgtggaagc 300
tccgatctgt atcacatgtg gaactttatc agcggaatct tttgggctaa gcacatgtgg 360
aatttcatcc tggctggata tggagctgga gtgtatctgg tggcttatca ggctacagtg 420
ggagtggctg gagctctggt ggctttcaag atcccattct atggaaaggc tatcagaatg 480
tatgtgggag gagtggaaaca cagagtgctg gtgggaggag tgctggctgc tttcctgctg 540
ctggctgatg ctagagtgtg gccaggatgt agcttttagca tcttcaagac ttccgaacgc 600
tcccagccta gaagactggg agtgagagct acaaggaaga gactgatcgt gtttccagat 660
ctgggagtgt ggatgaatag actgatcgt ttcgctctga gcgctttcag cctgcacagc 720
tatctgctgt tcaacatcct gggaggatgg gtggtgggaa tctatctgct gccaaacaga 780
tgaaagctt 789

<210> 237
<211> 107
<212> PRT
<213> Hepatitis C virus

<400> 237

Met Gly Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Leu Trp
1 5 10 15

Val Pro Gly Ser Arg Gly Tyr Leu Val Ala Tyr Gln Ala Thr Val Ala
20 25 30

Lys Phe Val Ala Ala Trp Thr Leu Lys Ala Ala Ala Leu Leu Phe Leu
35 40 45

Leu Leu Ala Asp Ala Leu Ile Phe Cys His Ser Lys Lys Lys Tyr Leu
50 55 60

Val Thr Arg His Ala Asp Val Leu Gly Phe Gly Ala Tyr Met Ser Lys
65 70 75 80

Cys Thr Cys Gly Ser Ser Asp Leu Tyr His Met Trp Asn Phe Ile Ser
85 90 95

Gly Ile Phe Trp Ala Lys His Met Trp Asn Phe
100 105

<210> 238
<211> 345
<212> DNA
<213> Hepatitis C virus

<400> 238
gaattcgccg ccaccatggg aatgcagggtg cagatccaaa gcctgtttct gctcctcctg 60
tggtgtgccc gatccagagg atacctcgtc gcctaccagg ccactgtggc taaattcgtg 120
gcagcctgga cactgaaagc tgcagctctg ctcttctctgc tcctggccga tgcactcatc 180
ttctgccatt ccaagaaaaa gtatctgggtc accagacatg ctgacgtgct ggggttttggc 240
gcctacatga gcaagtgcac ctgtggcagc tccgacctgt atcacatgtg gaactttatt 300
tctggaatct tttgggccaa gcacatgtgg aatttctgaa agctt 345

<210> 239
<211> 106
<212> PRT
<213> Hepatitis C virus

<400> 239

Met Gly Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Leu Trp
1 5 10 15

Val Pro Gly Ser Arg Gly Val Leu Val Gly Gly Val Leu Ala Ala Ala
20 25 30

Lys Phe Val Ala Ala Trp Thr Leu Lys Ala Ala Ala Phe Leu Leu Leu
35 40 45

Ala Asp Ala Arg Val Leu Ser Ala Phe Ser Leu His Ser Tyr Ile Leu
50 55 60

Ala Gly Tyr Gly Ala Gly Val Trp Met Asn Arg Leu Ile Ala Phe Ala
65 70 75 80

Ile Pro Phe Tyr Gly Lys Ala Ile Val Ala Gly Ala Leu Val Ala Phe
85 90 95

Lys Val Gly Ile Tyr Leu Leu Pro Asn Arg
100 105

<210> 240
<211> 342
<212> DNA
<213> Hepatitis C virus

<400> 240
gaattcgccg ccaccatggg aatgcagggtg cagatccaaa gcctgtttct gctcctcctg 60
tggtgccccg gatccagagg agtcctgggtg ggccgctgc taagtttgctc 120
gctgcttgga cactgaaggc agccgctttc ctgctcctgg cagacgccag ggtgctgtct 180
gccttcagcc tccactccta catcctcgca gggatggcg caggcgtgtg gatgaatcgg 240
ctgatcgctt ttgccattcc attctatggg aaagccattg tggctggcgc cctgggtggca 300
ttcaaggctg ggatctacct cctgcctaac cgctgaaagc tt 342

<210> 241
<211> 80
<212> PRT
<213> Hepatitis C virus

<400> 241
Met Gly Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Leu Trp
1 5 10 15

Val Pro Gly Ser Arg Gly Val Leu Val Gly Gly Val Leu Ala Ala Ala
20 25 30

Lys Phe Val Ala Ala Trp Thr Leu Lys Ala Ala Ala Phe Leu Leu Leu
35 40 45

Ala Asp Ala Arg Val Leu Ser Ala Phe Ser Leu His Ser Tyr Ile Leu
50 55 60

Ala Gly Tyr Gly Ala Gly Val Trp Met Asn Arg Leu Ile Ala Phe Ala
65 70 75 80

<210> 242
 <211> 264
 <212> DNA
 <213> Hepatitis C virus

<400> 242
 gaattcgccg ccaccatggg aatgcagggtg cagatccaaa gcctgtttct gtcctcctctg 60
 tgggtgcccc gatccagagg agtcctgggtg ggcggcgctcc tggccgctgc taagtttgtc 120
 gctgcttgga cactgaaggc agccgctttc ctgctcctgg cagacgccag ggtgctgtct 180
 gccttcagcc tccactccta catcctcgca gggataggcg caggcggtgtg gatgaatcgg 240
 ctgatcgctt ttgcctgagg atcc 264

<210> 243
 <211> 130
 <212> PRT
 <213> Hepatitis C virus

<400> 243
 Met Gly Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Leu Trp
 1 5 10 15
 Val Pro Gly Ser Arg Gly Asp Leu Met Gly Tyr Ile Pro Leu Val Ala
 20 25 30
 Lys Phe Val Ala Ala Trp Thr Leu Lys Ala Ala Ala Arg Leu Gly Val
 35 40 45
 Arg Ala Thr Arg Lys Leu Leu Phe Asn Ile Leu Gly Gly Trp Val Arg
 50 55 60
 Met Tyr Val Gly Gly Val Glu His Arg Arg Leu Ile Val Phe Pro Asp
 65 70 75 80
 Leu Gly Val Gly Val Ala Gly Ala Leu Val Ala Phe Lys Leu Pro Gly
 85 90 95
 Cys Ser Phe Ser Ile Phe Lys Thr Ser Glu Arg Ser Gln Pro Arg Gln
 100 105 110
 Leu Phe Thr Phe Ser Pro Arg Arg Tyr Leu Leu Pro Arg Arg Gly Pro
 115 120 125
 Arg Leu
 130

<210> 244
 <211> 414

<212> DNA
<213> Hepatitis C virus

<400> 244
gaattcgccg ccaccatggg aatgcagggtg cagatccaaa gcctgtttct gctcctcctg 60
tggtgcccc gatccagagg agacctgatg ggctacatcc ctctcgtggc caagtttgtg 120
gcagcttgga ccctgaaggc cgctgccaga ctgggagtg gcgctacacg gaaactcctg 180
ttaaaccatcc tgggaggggtg ggtgcggatg tacgtcggag gcgtcgagca cagaaggctc 240
attgtctttc cagatctcgg cgtgggcgtc gcaggcgac tcgtggcctt caaactgcca 300
gggtgcagct tcagcatttt caagacctcc gaacgctccc aaccagaca gctgttcaact 360
ttctctctc ggaggtatct gctgccca cgcggacca ggctgtgaaa gctt 414

<210> 245
<211> 98
<212> PRT
<213> Hepatitis C virus

<400> 245
Met Gly Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Leu Trp
1 5 10 15
Val Pro Gly Ser Arg Gly Leu Leu Phe Asn Ile Leu Gly Gly Trp Val
20 25 30
Lys Ala Lys Phe Val Ala Ala Trp Thr Leu Lys Ala Ala Ala Leu Ala
35 40 45
Asp Gly Gly Cys Ser Gly Gly Ala Tyr Arg Leu Ile Val Phe Pro Asp
50 55 60
Leu Gly Val Lys Phe Trp Ala Lys His Met Trp Asn Phe Ile Gly Val
65 70 75 80
Ala Gly Ala Leu Val Ala Phe Lys Lys Gln Leu Phe Thr Phe Ser Pro
85 90 95
Arg Arg

<210> 246
<211> 318
<212> DNA
<213> Hepatitis C virus

<400> 246
gaattcgccg ccaccatggg aatgcagggtg cagatccaaa gcctgtttct gctcctcctg 60

tgggtgcccc gatccagagg actgctcttc aacatcctgg gcggatgggt gaaggccaag 120
 ttcgtggctg cctggaccct gaaggctgcc gctctggccg acgggggatg cagcggcgga 180
 gcttacaggc tcattgtctt tcccgatctc ggagtcaaat tttgggcaaa gcacatgtgg 240
 aatttcacgc ggggtggccgg agccctgggc gcttttaaaa agcagctctt caccttctcc 300
 ccaagacggg gaggtacc 318

<210> 247
 <211> 107
 <212> PRT
 <213> Hepatitis C virus

<400> 247

Met Gly Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Leu Trp
 1 5 10 15

Val Pro Gly Ser Arg Gly Arg Leu Gly Val Arg Ala Thr Arg Lys Lys
 20 25 30

Ala Lys Phe Val Ala Ala Trp Thr Leu Lys Ala Ala Ala Lys Thr Ser
 35 40 45

Glu Arg Ser Gln Pro Arg Asn Leu Pro Gly Cys Ser Phe Ser Ile Phe
 50 55 60

Asn Asp Leu Met Gly Tyr Ile Pro Leu Val Lys Tyr Leu Leu Pro Arg
 65 70 75 80

Arg Gly Pro Arg Leu Asn Thr Leu Cys Gly Phe Ala Asp Leu Met Gly
 85 90 95

Tyr Arg Met Tyr Val Gly Gly Val Glu His Arg
 100 105

<210> 248
 <211> 345
 <212> DNA
 <213> Hepatitis C virus

<400> 248

gaattcgccg ccaccatggg aatgcagggtg cagatccaaa gcctgtttct gctcctcctg 60
 tgggtgcccc gatccagagg aaggctgggc gtgagagcca cccggaagaa ggccaagtcc 120
 gtggctgcct ggaccctgaa ggctgccgct aaaacaagcg agcgtccca gccaggaac 180
 ctgcctggat gctctttcag catctttaat gacctcatgg ggtacattcc actggtgaag 240
 tatctgctcc ccagacgggg cctcgcctg aacactctct gtggatttgc tgatctgatg 300

gggtacagga tgtatgtcgg cggagtcgaa cacagatgag gtacc

345

<210> 249
<211> 308
<212> PRT
<213> Hepatitis C virus

<400> 249

Met Gly Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Leu Trp
1 5 10 15

Val Pro Gly Ser Arg Gly Val Leu Val Gly Gly Val Leu Ala Ala Ala
20 25 30

Phe Leu Leu Leu Ala Asp Ala Arg Val Leu Ser Ala Phe Ser Leu His
35 40 45

Ser Tyr Ile Leu Ala Gly Tyr Gly Ala Gly Val Trp Met Asn Arg Leu
50 55 60

Ile Ala Phe Ala Gly Ala Ala Ala Arg Leu Gly Val Arg Ala Thr Arg
65 70 75 80

Lys Lys Ala Ala Ala Lys Thr Ser Glu Arg Ser Gln Pro Arg Asn Leu
85 90 95

Pro Gly Cys Ser Phe Ser Ile Phe Asn Asp Leu Met Gly Tyr Ile Pro
100 105 110

Leu Val Lys Tyr Leu Leu Pro Arg Arg Gly Pro Arg Leu Asn Thr Leu
115 120 125

Cys Gly Phe Ala Asp Leu Met Gly Tyr Arg Met Tyr Val Gly Gly Val
130 135 140

Glu His Arg Lys Leu Leu Phe Asn Ile Leu Gly Gly Trp Val Lys Ala
145 150 155 160

Ala Ala Leu Ala Asp Gly Gly Cys Ser Gly Gly Ala Tyr Arg Leu Ile
165 170 175

Val Phe Pro Asp Leu Gly Val Lys Phe Trp Ala Lys His Met Trp Asn
180 185 190

Phe Ile Gly Val Ala Gly Ala Leu Val Ala Phe Lys Lys Gln Leu Phe
195 200 205

Thr Phe Ser Pro Arg Arg Asn Gly Tyr Leu Val Ala Tyr Gln Ala Thr
210 215 220

Val Ala Ala Ala Leu Leu Phe Leu Leu Leu Ala Asp Ala Leu Ile Phe
225 230 235 240

Cys His Ser Lys Lys Lys Tyr Leu Val Thr Arg His Ala Asp Val Leu
245 250 255

Gly Phe Gly Ala Tyr Met Ser Lys Cys Thr Cys Gly Ser Ser Asp Leu
260 265 270

Tyr His Met Trp Asn Phe Ile Ser Gly Ile Phe Trp Ala Lys His Met
275 280 285

Trp Asn Phe Lys Ala Ala Ala Ala Lys Phe Val Ala Ala Trp Thr Leu
290 295 300

Lys Ala Ala Ala
305

<210> 250
<211> 948
<212> DNA
<213> Hepatitis C virus

<400> 250
gaattcgccg ccaccatggg aatgcagggtg cagatccaaa gcctgtttct gctcctcctg 60
tggtgccccg gctccagagg agtcctgggtg ggcgggcgcc tggcagccgc tttcctgctc 120
ctggcagacg ccaggggtgct gtctgccttc agcctccact cctacatcct cgcaggggtat 180
ggcgagggcg tgtggatgaa tcggctgatc gcctttgccg gcgctgccgc aaggctgggc 240
gtgagagcca cccggaagaa ggctgccgct aaaacaagcg agcgctccca gccaggaac 300
ctgcctggat gctctttcag catctttaat gacctcatgg ggtacattcc actgggtgaag 360
tatctgctcc ccagacgggg cctcgcctg aacactctct gtggatttgc tgatctgatg 420
gggtacagga tgtatgtcgg cggagtcgaa cacagaaaac tgctcttcaa catcctgggc 480
ggatgggtga aggctgccgc tctggccgac gggggatgca gcggcggagc ttacaggctc 540
attgtctttc ccgatctcgg agtcaaattt tgggcaaagc acatgtggaa tttcatcggg 600
gtggccggag ccttggtcgc ttttaaaaag cagctcttca cttctctccc aagacggaac 660
ggatacctcg tcgcctacca ggccactgtg gctgcagctc tgctcttcct gctcctggcc 720
gatgcactca tcttctgcca ttccaagaaa aagtatctgg tcaccagaca tgctgacgtg 780
ctgggggttg gcgcctacat gagcaagtgc acctgtggca gctccgacct gtatcacatg 840

tggaacttta tttctggaat cttttgggcc aagcacatgt ggaattttta ggccgcagca 900
gctaaattcg tggcagcctg gacactgaaa gcagctgcat gaggatcc 948

<210> 251
<211> 308
<212> PRT
<213> Hepatitis C virus

<400> 251

Met Gly Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Leu Trp
1 5 10 15

Val Pro Gly Ser Arg Gly Arg Leu Gly Val Arg Ala Thr Arg Lys Lys
20 25 30

Ala Ala Ala Lys Thr Ser Glu Arg Ser Gln Pro Arg Asn Leu Pro Gly
35 40 45

Cys Ser Phe Ser Ile Phe Asn Asp Leu Met Gly Tyr Ile Pro Leu Val
50 55 60

Lys Tyr Leu Leu Pro Arg Arg Gly Pro Arg Leu Asn Thr Leu Cys Gly
65 70 75 80

Phe Ala Asp Leu Met Gly Tyr Arg Met Tyr Val Gly Gly Val Glu His
85 90 95

Arg Lys Leu Leu Phe Asn Ile Leu Gly Gly Trp Val Lys Ala Ala Ala
100 105 110

Leu Ala Asp Gly Gly Cys Ser Gly Gly Ala Tyr Arg Leu Ile Val Phe
115 120 125

Pro Asp Leu Gly Val Lys Phe Trp Ala Lys His Met Trp Asn Phe Ile
130 135 140

Gly Val Ala Gly Ala Leu Val Ala Phe Lys Lys Gln Leu Phe Thr Phe
145 150 155 160

Ser Pro Arg Arg Asn Gly Tyr Leu Val Ala Tyr Gln Ala Thr Val Ala
165 170 175

Ala Ala Leu Leu Phe Leu Leu Leu Ala Asp Ala Leu Ile Phe Cys His
180 185 190

Ser Lys Lys Lys Tyr Leu Val Thr Arg His Ala Asp Val Leu Gly Phe
195 200 205

Gly Ala Tyr Met Ser Lys Cys Thr Cys Gly Ser Ser Asp Leu Tyr His
210 215 220

Met Trp Asn Phe Ile Ser Gly Ile Phe Trp Ala Lys His Met Trp Asn
225 230 235 240

Phe Lys Lys Ala Ala Ala Val Leu Val Gly Gly Val Leu Ala Ala Ala
245 250 255

Phe Leu Leu Leu Ala Asp Ala Arg Val Leu Ser Ala Phe Ser Leu His
260 265 270

Ser Tyr Ile Leu Ala Gly Tyr Gly Ala Gly Val Trp Met Asn Arg Leu
275 280 285

Ile Ala Phe Ala Asn Ala Ala Ala Lys Phe Val Ala Ala Trp Thr Leu
290 295 300

Lys Ala Ala Ala
305

<210> 252
<211> 948
<212> DNA
<213> Hepatitis C virus

<400> 252
gaattcgccg ccaccatggg aatgcaggtg cagatccaaa gcctgtttct gctcctcctg 60
tgggtgcccc gctccagagg aaggctgggc gtgagagcca cccggaagaa ggctgccgct 120
aaaacaagcg agcgctccca gcccaggaac ctgcctggat gctctttcag catctttaat 180
gacctcatgg ggtacattcc actggtgaag tatctgctcc ccagacgggg ccctcgccctg 240
aacactctct gtggatttgc tgatctgatg gggtacagga tgtatgtcgg cggagtcgaa 300
cacagaaaac tgctcttcaa catcctgggc ggatgggtga aggctgccgc tctggccgac 360
gggggatgca gcggcgaggc ttacaggctc attgtctttc ccgatctcgg agtcaaattt 420
tgggcaaagc acatgtggaa tttcatcggg gtggccggag ccctggtcgc ttttaaaaag 480
cagctcttca ccttctcccc aagacggaac ggatacctcg tcgcctacca ggccactgtg 540
gctgcagctc tgctcttccg gctcctggcc gatgcactca tcttctgcca ttccaagaaa 600
aagtatctgg tcaccagaca tgctgacgtg ctggggtttg ggcctacat gagcaagtgc 660
acctgtggca gctccgacct gtatcacatg tggaacttta tttctggaat cttttgggcc 720
aagcacatgt ggaattttta gaaagccgct gcagtcctgg tgggcggcgt cctggcagcc 780
gctttcctgc tcctggcaga cgccagggtg ctgtctgcct tcagcctcca ctccctacatc 840

ctcgcagggt atggcgcagg cgtgtggatg aatcggctga tcgcctttgc caatgctgca 900
gctaaattcg tggcagcctg gacactgaaa gcagctgcat gaggatcc 948

<210> 253
<211> 123
<212> PRT
<213> Unknown

<220>
<223> AOSI.K

<400> 253

Met Gly Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Leu Trp
1 5 10 15

Val Pro Gly Ser Arg Gly His Thr Leu Trp Lys Ala Gly Ile Leu Tyr
20 25 30

Lys Ala Lys Phe Val Ala Ala Trp Thr Leu Lys Ala Ala Ala Phe Leu
35 40 45

Pro Ser Asp Phe Phe Pro Ser Val Lys Phe Leu Leu Ser Leu Gly Ile
50 55 60

His Leu Tyr Met Asp Asp Val Val Leu Gly Val Gly Leu Ser Arg Tyr
65 70 75 80

Val Ala Arg Leu Phe Leu Leu Thr Arg Ile Leu Thr Ile Ser Thr Leu
85 90 95

Pro Glu Thr Thr Val Val Arg Arg Gln Ala Phe Thr Phe Ser Pro Thr
100 105 110

Tyr Lys Trp Leu Ser Leu Leu Val Pro Phe Val
115 120

<210> 254
<211> 372
<212> DNA
<213> Unknown

<220>
<223> AOSI.K

<400> 254

atgggaatgc aggtgcagat ccagagcctg tttctgctcc tcctgtgggt gcccggtcc 60
agaggacaca cctgtggaa ggccggaatc ctgtataagg ccaagttcgt ggctgcctgg 120
accctgaagg ctgccgtttt cctgcctagc gatttctttc ctagecgtgaa gttcctgctg 180

tccctgggaa tccacctgta tatggatgac gtggtgctgg gagtgggact gtccaggtac 240
 gtggctaggc tgttcctgct gaccagaatc ctgaccatct ccaccctgcc agagaccacc 300
 gtggtgagga ggcaggcctt caccttttagc cctacctata agtggctgag cctgctgggtg 360
 ccctttgtgt ga 372

<210> 255
 <211> 206
 <212> PRT
 <213> Hepatitis B virus

<400> 255

Met Gly Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Leu Trp
 1 5 10 15

Val Pro Gly Ser Arg Gly His Thr Leu Trp Lys Ala Gly Ile Leu Tyr
 20 25 30

Lys Ala Lys Phe Val Ala Ala Trp Thr Leu Lys Ala Ala Ala Phe Leu
 35 40 45

Pro Ser Asp Phe Phe Pro Ser Val Phe Leu Leu Ser Leu Gly Ile His
 50 55 60

Leu Tyr Met Asp Asp Val Val Leu Gly Val Gly Leu Ser Arg Tyr Val
 65 70 75 80

Ala Arg Leu Phe Leu Leu Thr Arg Ile Leu Thr Ile Ser Thr Leu Pro
 85 90 95

Glu Thr Thr Val Val Arg Arg Gln Ala Phe Thr Phe Ser Pro Thr Tyr
 100 105 110

Lys Trp Leu Ser Leu Leu Val Pro Phe Val Ile Pro Ile Pro Ser Ser
 115 120 125

Trp Ala Phe Thr Pro Ala Arg Val Thr Gly Gly Val Phe Lys Val Gly
 130 135 140

Asn Phe Thr Gly Leu Tyr Leu Pro Ser Asp Phe Phe Pro Ser Val Thr
 145 150 155 160

Leu Trp Lys Ala Gly Ile Leu Tyr Lys Asn Val Ser Ile Pro Trp Thr
 165 170 175

His Lys Leu Val Val Asp Phe Ser Gln Phe Ser Arg Ser Ala Ile Cys
 180 185 190

Ser Val Val Arg Arg Ala Leu Met Pro Leu Tyr Ala Cys Ile
195 200 205

<210> 256
<211> 621
<212> DNA
<213> Hepatitis B virus

<400> 256
atgggaatgc aggtgcagat ccagagcctg tttctgctcc tcctgtgggt gcccggtcc 60
agaggacaca ccctgtggaa ggccggaatc ctgtataagg ccaagttcgt ggctgcctgg 120
accctgaagg ctgccgcttt cctgcctagc gatttcttcc ctagcgtggt cctgctgtcc 180
ctgggaatcc acctgtatat ggatgacgtg gtgctgggag tgggactgtc caggtagctg 240
gctaggctgt tcctgctgac cagaatcctg accatctcca ccctgccaga gaccaccgtg 300
gtgaggaggc aggccttcac ctttagccct acctataagt ggctgagcct gctggtgccc 360
tttgtgatcc ctatccctag ctccctgggt ttcacccag ccagggtgac cggaggagtg 420
tttaagggtg gaaacttcac cggcctgtat ctgcccagcg atttcttcc tagcgtgacc 480
ctgtggaagg ccgggatcct gtacaagaat gtgtccatcc cttggacca caagctggtg 540
gtggactttt cccagttcag cagatccgct atctgctccg tggtagaggag agctctgatg 600
ccactgtatg cctgtatctg a 621

<210> 257
<211> 219
<212> PRT
<213> Hepatitis B virus

<400> 257

Met Gly Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Leu Trp
1 5 10 15

Val Pro Gly Ser Arg Gly His Thr Leu Trp Lys Ala Gly Ile Leu Tyr
20 25 30

Lys Ala Lys Phe Val Ala Ala Trp Thr Leu Lys Ala Ala Ala Phe Leu
35 40 45

Pro Ser Asp Phe Phe Pro Ser Val Asn Phe Leu Leu Ser Leu Gly Ile
50 55 60

His Leu Tyr Met Asp Asp Val Val Leu Gly Val Gly Leu Ser Arg Tyr
65 70 75 80

Val Ala Arg Leu Phe Leu Leu Thr Arg Ile Leu Thr Ile Ser Thr Leu

	85		90		95
Pro Glu Thr Thr Val Val Arg Arg Gln Ala Phe Thr Phe Ser Pro Thr	100		105		110
Tyr Lys Gly Ala Ala Ala Trp Leu Ser Leu Leu Val Pro Phe Val Asn	115		120		125
Ile Pro Ile Pro Ser Ser Trp Ala Phe Lys Thr Pro Ala Arg Val Thr	130		135		140
Gly Gly Val Phe Lys Val Gly Asn Phe Thr Gly Leu Tyr Asn Leu Pro	145		150		155
Ser Asp Phe Phe Pro Ser Val Lys Thr Leu Trp Lys Ala Gly Ile Leu	165		170		175
Tyr Lys Asn Val Ser Ile Pro Trp Thr His Lys Gly Ala Ala Leu Val	180		185		190
Val Asp Phe Ser Gln Phe Ser Arg Asn Ser Ala Ile Cys Ser Val Val	195		200		205
Arg Arg Ala Leu Met Pro Leu Tyr Ala Cys Ile	210		215		

<210> 258
 <211> 660
 <212> DNA
 <213> Hepatitis B virus

<400> 258	
atgggaatgc aggtgcagat ccagagcctg tttctgctcc tcctgtgggt gcccggtcc	60
agaggacaca ccctgtggaa ggccggaatc ctgtataagg ccaagttcgt ggctgcctgg	120
accctgaagg ctgccgcttt cctgcctagc gatttctttc ctacgctgaa cttcctgctg	180
tccctgggaa tccacctgta tatggatgac gtggtgctgg gagtgggact gtccaggtac	240
gtggctaggc tgttctctgct gaccagaatc ctgaccatct ccaccctgcc agagaccacc	300
gtggtgagga ggcaggcctt caccttttagc cctacctata agggagccgc tgccctggctg	360
agcctgctgg tgccctttgt gaatatccct atccctagct cctgggcttt caagacccca	420
gccagggtga ccggaggagt gtttaagggt ggaaacttca ccggcctgta taacctgccc	480
agcgatttct ttcctagcgt gaagaccctg tggaaggccg gaatcctgta caagaatgtg	540
tccatccctt ggaccacaa gggagccgct ctggtggtgg acttttccca gttcagcaga	600
aattccgcta tctgctccgt ggtgaggaga gctctgatgc cactgtatgc ctgtatctga	660

<210> 259
<211> 168
<212> PRT
<213> Unknown

<220>
<223> PfCTL.1

<400> 259

Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Leu Trp Val Pro
1 5 10 15

Gly Ser Arg Gly Ile Leu Ser Val Ser Ser Phe Leu Phe Val Asn Ala
20 25 30

Ala Ala Gln Thr Asn Phe Lys Ser Leu Leu Arg Asn Leu Pro Ser Glu
35 40 45

Asn Glu Arg Gly Tyr Lys Ala Ala Ala Leu Leu Ala Cys Ala Gly Leu
50 55 60

Ala Tyr Lys Lys Ala Ala Ala Ala Lys Phe Val Ala Ala Trp Thr Leu
65 70 75 80

Lys Ala Ala Ala Lys Ala Phe Met Lys Ala Val Cys Val Glu Val Asn
85 90 95

Ala Ala Ala Ser Phe Leu Phe Val Glu Ala Leu Phe Asn Ala Thr Pro
100 105 110

Tyr Ala Gly Glu Pro Ala Pro Phe Lys Ala Ala Ala Lys Tyr Lys Leu
115 120 125

Ala Thr Ser Val Leu Lys Ala Gly Val Ser Glu Asn Ile Phe Leu Lys
130 135 140

Asn Ala Ala Ala Tyr Phe Ile Leu Val Asn Leu Leu Ile Lys Ala Gly
145 150 155 160

Leu Leu Gly Val Val Ser Thr Val
165

<210> 260
<211> 513
<212> DNA
<213> Unknown

<220>
<223> PfCTL.1

```

<400> 260
atgggaatgc aggtgcagat ccagagcctg tttctgctcc tcctgtgggt gcccggatcc      60
agaggaatcc tgagcgtgtc ctctttcctg tttgtcaacg ccgctgcaca gaccaatttc      120
aagagcctcc tgaggaacct cccctccgag aacgaaagag gctacaaagc cgctgcactg      180
ctcgcctgcg ctggactggc ctataagaaa gccgctgcag ccaagttcgt ggccgcttgg      240
acactgaagg ccgctgcaaa agcctttatg aaggctgtct gtgtggaggt caatgccgct      300
gcatctttcc tgtttgtgga ggccctcttt aacgctactc cttacgcagg ggaaccagcc      360
cccttcaagg ccgctgcaaa atataagctg gcaaccagcg tgctgaaggc tggcgtgtcc      420
gagaatattt ttctgaaaaa cgccgctgca tacttcatcc tggatgaatct gctcattaag      480
gccggactcc tgggggtggg ctctacagtg tga                                     513

```

```

<210> 261
<211> 157
<212> PRT
<213> Unknown

```

```

<220>
<223> PfCTL.2

```

```

<400> 261

```

```

Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Leu Trp Val Pro
1           5           10           15

```

```

Gly Ser Arg Gly Phe Val Glu Ala Leu Phe Gln Glu Tyr Asn Ala Ala
20           25           30

```

```

Ala Lys Tyr Leu Val Ile Val Phe Leu Ile Asn Ala Leu Ala Cys Ala
35           40           45

```

```

Gly Leu Ala Tyr Lys Lys Phe Tyr Phe Ile Leu Val Asn Leu Leu Lys
50           55           60

```

```

Ala Ala Leu Phe Phe Ile Ile Phe Asn Lys Asn Ala Ala Ala Lys Phe
65           70           75           80

```

```

Val Ala Ala Trp Thr Leu Lys Ala Ala Ala Lys Phe Ile Leu Val Asn
85           90           95

```

```

Leu Leu Ile Phe His Asn Phe Gln Asp Glu Glu Asn Ile Gly Ile Tyr
100          105          110

```

```

Lys Leu Pro Tyr Gly Arg Thr Asn Leu Lys Ala Ala Ala Val Leu Leu
115          120          125

```

Gly Gly Val Gly Leu Val Leu Asn Phe Leu Ile Phe Phe Asp Leu Phe
130 135 140

Leu Val Lys Ala Val Leu Ala Gly Leu Leu Gly Val Val
145 150 155

<210> 262
<211> 480
<212> DNA
<213> Unknown

<220>
<223> PfCTL.2

<400> 262
atgggaatgc aggtgcagat ccagagcctg tttctgctcc tctgtgggt gcccggatecc 60
agaggattcg tggaggccct gtttcaggaa tacaacgccg ctgcaaagta tctcgtcac 120
gtgttcctga tcaatgctct ggcattgcgc gccctcgctt acaaaaagtt ttacttcatt 180
ctgggtcaacc tgctcaaggc cgctctgttc tttatcattt tcaataaaaa cgccgcagct 240
aagtttgtgg ccgcattggac cctgaaggcc gctgcaaaat tcattcctcg gaactctgctc 300
atttttcaca acttccaaga cgaggaaaat atcggaattt ataagctgcc ctacgggagg 360
acaaacctga aagccgctgc agtcctgctc gccggagtgg ggctgggtgct caattttctg 420
atcttctttg atctgttctt ggtgaaggcc gtctggccg gcctgctcgg agtcgtgtga 480

<210> 263
<211> 169
<212> PRT
<213> Unknown

<220>
<223> PfCTL.3

<400> 263

Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Trp Val Pro
1 5 10 15

Gly Ser Arg Gly Val Phe Leu Ile Phe Phe Asp Leu Phe Leu Asn Ala
20 25 30

Ala Ala Pro Ser Asp Gly Lys Cys Asn Leu Tyr Lys Ala Ala Ala Val
35 40 45

Thr Cys Gly Asn Gly Ile Gln Val Arg Lys Leu Phe His Ile Phe Asp
50 55 60

Gly Asp Asn Glu Ile Lys Ala His Val Leu Ser His Asn Ser Tyr Glu
65 70 75 80

Lys Asn Tyr Tyr Gly Lys Gln Glu Asn Trp Tyr Ser Leu Lys Lys Ile
85 90 95

Leu Ser Val Phe Phe Leu Ala Asn Ala Ala Ala Lys Phe Ile Lys Ser
100 105 110

Leu Phe His Ile Phe Lys Ala Ala Ala Leu Tyr Ile Ser Phe Tyr Phe
115 120 125

Ile Lys Ala Lys Phe Val Ala Ala Trp Thr Leu Lys Ala Ala Ala Lys
130 135 140

Ala Ala Ala Tyr Tyr Ile Pro His Gln Ser Ser Leu Lys Ala Ala Ala
145 150 155 160

Gly Leu Ile Met Val Leu Ser Phe Leu
165

<210> 264
<211> 516
<212> DNA
<213> Unknown

<220>
<223> PfCTL.3

<400> 264
atgggaatgc aggtgcagat ccagagcctg tttctgctcc tctgtgggt gcccggatcc 60
agaggagtgt tctgatctt ctttgacctg ttcctgaacg ccgctgcacc cagcgatggc 120
aagtgcaatc tctacaaggc cgctgcagtg acctgtggaa acgggattca ggtcaggaaa 180
ctctttcaca tcttcgacgg cgataacgag atcaaggccc atgtgctgtc ccacaattct 240
tatgaaaaaa actactatgg aaagcaagag aattggtaca gcctgaagaa aattctgtcc 300
gtgttctttc tcgccaacgc cgctgcaaag tttatcaagt ctctgttcca tattttcaag 360
gccgctgcac tctacatcag cttctatattt attaaagcca aatttgtggc cgcttggaca 420
ctgaaggccg ctgcaaaagc cgctgcatac tatatccctc accagagctc cctgaaggcc 480
gctgcagggc tgatcatggt gctctctttc ctgtga 516

<210> 265
<211> 456
<212> PRT
<213> Unknown

<220>
<223> PfCTL/HTL/ (N)

<400> 265

Met 1	Gln	Val	Gln	Ile 5	Gln	Ser	Leu	Phe 10	Leu	Leu	Leu	Leu	Trp	Val 15	Pro
Gly	Ser	Arg	Gly 20	Ser	Ser	Val	Phe	Asn 25	Val	Val	Asn	Ser	Ser 30	Ile	Gly
Leu	Ile	Met 35	Val	Leu	Ser	Phe	Leu 40	Gly	Pro	Gly	Pro	Gly 45	Leu	Tyr	Ile
Ser	Phe 50	Tyr	Phe	Ile	Leu	Val 55	Asn	Leu	Leu	Ile	Phe 60	His	Ile	Asn	Gly
Lys 65	Ile	Ile	Lys	Asn	Ser 70	Glu	Gly	Pro	Gly	Pro 75	Gly	Pro	Asp	Ser	Ile 80
Gln	Asp	Ser	Leu	Lys 85	Glu	Ser	Arg	Lys	Leu 90	Ser	Gly	Pro	Gly	Pro 95	Gly
Val	Leu	Ala	Gly 100	Leu	Leu	Gly	Val	Val 105	Ser	Thr	Val	Leu	Leu 110	Gly	Gly
Val	Gly	Leu 115	Val	Leu	Gly	Pro	Gly 120	Pro	Gly	Leu	Pro	Ser 125	Glu	Asn	Glu
Arg	Gly 130	Tyr	Tyr	Ile	Pro	His 135	Gln	Ser	Ser	Leu	Gly 140	Pro	Gly	Pro	Gly
Gln 145	Thr	Asn	Phe	Lys	Ser 150	Leu	Leu	Arg	Asn	Leu 155	Gly	Val	Ser	Glu	Asn 160
Ile	Phe	Leu	Lys	Gly 165	Pro	Gly	Pro	Gly	Phe 170	Gln	Asp	Glu	Glu	Asn 175	Ile
Gly	Ile	Tyr	Gly 180	Pro	Gly	Pro	Gly	Lys 185	Tyr	Leu	Val	Ile	Val 190	Phe	Leu
Ile	Phe 195	Phe	Asp	Leu	Phe	Leu	Val 200	Gly	Pro	Gly	Pro	Gly 205	Lys	Phe	Ile
Lys 210	Ser	Leu	Phe	His	Ile	Phe 215	Asp	Gly	Asp	Asn	Glu 220	Ile	Gly	Pro	Gly
Pro 225	Gly	Lys	Ser	Lys	Tyr 230	Lys	Leu	Ala	Thr	Ser 235	Val	Leu	Ala	Gly	Leu 240
Leu	Gly	Pro	Gly	Pro 245	Gly	Leu	Pro	Tyr	Gly 250	Lys	Thr	Asn	Leu	Gly 255	Pro

Gly Pro Gly Arg His Asn Trp Val Asn His Ala Val Pro Leu Ala Met
260 265 270

Lys Leu Ile Gly Pro Gly Pro Gly Met Arg Lys Leu Ala Ile Leu Ser
275 280 285

Val Ser Ser Phe Leu Phe Val Glu Ala Leu Phe Gln Glu Tyr Gly Pro
290 295 300

Gly Pro Gly Val Thr Cys Gly Asn Gly Ile Gln Val Arg Gly Pro Gly
305 310 315 320

Pro Gly Met Asn Tyr Tyr Gly Lys Gln Glu Asn Trp Tyr Ser Leu Lys
325 330 335

Lys Gly Pro Gly Pro Gly Pro Ser Asp Gly Lys Cys Asn Leu Tyr Ala
340 345 350

Asp Ser Ala Trp Glu Asn Val Lys Asn Val Ile Gly Pro Phe Met Lys
355 360 365

Ala Val Cys Val Glu Val Gly Pro Gly Pro Gly Lys Ile Leu Ser Val
370 375 380

Phe Phe Leu Ala Leu Phe Phe Ile Ile Phe Asn Lys Gly Pro Gly Pro
385 390 395 400

Gly His Val Leu Ser His Asn Ser Tyr Glu Lys Gly Pro Gly Pro Gly
405 410 415

Lys Tyr Lys Ile Ala Gly Gly Ile Ala Gly Gly Leu Ala Leu Leu Ala
420 425 430

Cys Ala Gly Leu Ala Tyr Lys Phe Val Val Pro Gly Ala Ala Thr Pro
435 440 445

Tyr Ala Gly Glu Pro Ala Pro Phe
450 455

<210> 266
<211> 1385
<212> DNA
<213> Unknown

<220>
<223> PfCTL/HTL/ (N)

<400> 266

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atgggaatgc aggtgcagat ccagagcctg tttctgctcc tcctgtgggt gcccgatcc      60
agaggaagta gtgtgttcaa tggtgtgaac tcatcaattg gtctgatcat ggtgctgagc     120
tttctcgggc cagggccagg attatatatt tctttctact tcatccttgt caacctgtta     180
atattccaca ttaacggcaa aataataaag aacagtgaag gccctgggcc tgggcctgac     240
tcgatccagg attctctaaa agaatcgagg aagctctccg gaccaggccc tgggtgtactc     300
gccggggttg tgggagtagt tagcacagtg ctgttaggag gcgtcggcct cgtcttagga     360
cctggaccag gtctgccgtc cgaaaacgaa agaggatact acatacctca ccagagcagc     420
ctcggcccag gccccggaca aaccaatttc aaatccctct tgcgaaatct aggagtgagc     480
gagaacatat ttcttaaagg acccgggtccc ggctttcagg acgaggagaa tataggtatt     540
tacgggtccag gacctggaat atacctagtg atcgtattcc taattttttt tgacctattt     600
ctgggtgggcc caggtcccgg aaagttcatt aaatcactct tccacatttt tgacggagat     660
aacgagatag gaccgggtcc cgggaaatca aagtacaaac tagccacttc agtgcctggcc     720
ggccttctag ggccggggccc agggctcccc tatggaaaga caaatcttgg ccccggtcca     780
ggacggcaca actgggtgaa tcatgcgggt ccattggcca tgaaactaat cgggccccgg     840
ccaggcatgc gcaaacttgc aattctaagc gtaagttcat ttctgttcgt agaggcactg     900
tttcaagaat atggcccagg acctggcgct acatgtggga atgggatcca ggtgagagga     960
ccggggacctg gtatgaacta ttacggtaaa caggaaaatt ggtactccct gaaaaaggg     1020
ccaggccccg gccctcaga tggttaagtgc aacctgtatg ctgactcagc atgggagaac     1080
gtaaaaaatg taataggccc attcatgaag gcagtttgtg tcgaagtcgg accaggccca     1140
ggaaaaatac tttctgtctt cttoctagct ctcttcttca tcatcttcaa caagggacca     1200
gggccaggtc acgtgttatc ccataactct tatgaaaaag ggccaggacc tgggaaatac     1260
aaaatcgtag gagggatcgc cggcgggcta gcgtccttg cctgcgcagg cttggcttac     1320
aaattcggtg taccaggagc tgcaacaccc tatgcaggag aacctgcccc attttgaaga     1380
tctgc                                             1385

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<210> 267
 <211> 419
 <212> PRT
 <213> Unknown

<220>
 <223> Pf33

<400> 267

Met Gly Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Leu Trp
 1 5 10 15

Val Pro Gly Ser Arg Gly Phe Met Lys Ala Val Cys Val Glu Val Asn
20 25 30

Val Thr Cys Gly Asn Gly Ile Gln Val Arg Lys Gly Leu Ile Met Val
35 40 45

Leu Ser Phe Leu Asn Ala Ala Leu Phe His Ile Phe Asp Gly Asp Asn
50 55 60

Glu Ile Lys Ala Ala Leu Leu Ala Cys Ala Gly Leu Ala Tyr Lys Lys
65 70 75 80

Ser Phe Leu Phe Val Glu Ala Leu Phe Asn Ala Ala Pro Ser Asp Gly
85 90 95

Lys Cys Asn Leu Tyr Lys Ala Ala Gln Thr Asn Phe Lys Ser Leu Leu
100 105 110

Arg Asn Leu Pro Ser Glu Asn Glu Arg Gly Tyr Lys Ala Ala Gly Val
115 120 125

Ser Glu Asn Ile Phe Leu Lys Asn Ala Ala Ala Tyr Phe Ile Leu Val
130 135 140

Asn Leu Leu Ile Lys Ala Ala Ala Ile Leu Ser Val Ser Ser Phe Leu
145 150 155 160

Phe Val Asn Thr Pro Tyr Ala Gly Glu Pro Ala Pro Phe Lys Ala Ala
165 170 175

Ala Lys Tyr Lys Leu Ala Thr Ser Val Leu Lys Ala Ala Val Phe Leu
180 185 190

Ile Phe Phe Asp Leu Phe Leu Asn Tyr Tyr Ile Pro His Gln Ser Ser
195 200 205

Leu Lys Ala Ala Gly Leu Leu Gly Asn Val Ser Thr Val Gly Ala Val
210 215 220

Leu Leu Gly Gly Val Gly Leu Val Leu Asn Leu Ala Cys Ala Gly Leu
225 230 235 240

Ala Tyr Lys Lys Ala Lys Phe Ile Lys Ser Leu Phe His Ile Phe Lys
245 250 255

Ala Ala Phe Tyr Phe Ile Leu Val Asn Leu Leu Lys Ala Phe Leu Ile
260 265 270

Phe Phe Asp Leu Phe Leu Val Lys Ala Leu Phe Phe Ile Ile Phe Asn
275 280 285

Lys Asn Tyr Tyr Gly Lys Gln Glu Asn Trp Tyr Ser Leu Lys Phe Val
290 295 300

Glu Ala Leu Phe Gln Glu Tyr Asn Ala Ala Lys Phe Val Ala Ala
305 310 315 320

Trp Thr Leu Lys Ala Ala Ala Lys Ile Leu Ser Val Phe Phe Leu Ala
325 330 335

Asn Ala Val Leu Ala Gly Leu Leu Gly Asn Val Asn Phe Gln Asp Glu
340 345 350

Glu Asn Ile Gly Ile Tyr Lys Ala Ala Ala Leu Tyr Ile Ser Phe Tyr
355 360 365

Phe Ile Lys Ala Phe Ile Leu Val Asn Leu Leu Ile Phe His Asn Ala
370 375 380

Ala Leu Pro Tyr Gly Arg Thr Asn Leu Lys Ala Ala His Val Leu Ser
385 390 395 400

His Asn Ser Tyr Glu Lys Asn Ala Ala Lys Tyr Leu Val Ile Val
405 410 415

Phe Leu Ile

<210> 268
<211> 1269
<212> DNA
<213> Unknown

<220>
<223> Pf33

<400> 268
gccgccacca tgggaatgca ggtgcagatc cagagcctgt ttctgctcct cctgtgggtg 60
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ggaattcagg tgagaaaggg actcatcatg gtactcagct ttctgaacgc agccctgttc 180
cacatctttg acggagacaa tgaaatcaaa gccgcattgc tcgcctgtgc cggactagcc 240
tataaaaaga gtttcctttt cgttgaagca ctatttaacg cagcaccagc tgacggtaaa 300
tgcaacctat ataaagcagc tcagactaat ttcaaaagcc tgtaagaaa tctgcctca 360

gagaatgaaa ggggttacaa agccgccggc gtgtccgaga atattttcct gaagaacgcc 420
gctgcttatt ttatactcgt gaatctactc ataaaggcag ccgcaatcct ttcagtgtcc 480
agctttctgt ttgttaacac accatatgcg ggcgagccgg ctcttttcaa ggctgcagca 540
aaatacaagc ttgccacatc agtattgaaa gcagctgtgt ttttgatatt ctttgatctt 600
tttttaaact actacatacc tcatacgtct agtcttaaag cagccgggct actggggaac 660
gtctctactg tggggggcgt cttacttgga ggagttggcc tcgtgttgaa cctcgcgtgc 720
gcagggtctgg cctacaaaaa agcgaaattc atcaagtctc tgttccacat ttttaaagcc 780
gcattctatt tcatactagt gaaccttctc aaagctttcc tgatcttctt cgatctattc 840
ctcgtaaaag cgctattctt cattatcttt aacaaaaatt attacggcaa gcaagaaaat 900
tgggtactcac tcaagtttgt agaagctctg ttccaggaat acaacgccgc tgctaaattc 960
gttgagcgtt ggaccctgaa agcagctgca aagatcctat cggctcttctt tctcgctaatt 1020
gccgtattag caggacttct aggcaacgtg aactttcaag acgaagagaa tataggcatc 1080
tacaaagccg cagcactgta catttcattc tacttcatca aggccttcat actggtcaac 1140
cttctgatat ttcataatgc agcactgcca tatgggagaa ccaacttgaa agcggcccac 1200
gtgttgagcc acaactccta cgagaagaac gccgccgcga aatatctcgt cattgtcttc 1260
ctgatttga 1269

<210> 269
<211> 180
<212> PRT
<213> Unknown

<220>
<223> TB.1

<400> 269

Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Leu Trp Val Pro
1 5 10 15

Gly Ser Arg Gly Arg Met Ser Arg Val Thr Thr Phe Thr Val Lys Ala
20 25 30

Leu Val Leu Leu Met Leu Pro Val Val Asn Leu Met Ile Gly Thr Ala
35 40 45

Ala Ala Val Val Lys Ala Leu Val Leu Leu Met Leu Pro Val Gly Ala
50 55 60

Gly Leu Met Thr Ala Val Tyr Leu Val Gly Ala Ala Ala Met Ala Leu
65 70 75 80

-92-

Leu Arg Leu Pro Val Lys Arg Met Phe Ala Ala Asn Leu Gly Val Asn
85 90 95

Ser Leu Tyr Phe Gly Gly Ile Cys Val Gly Arg Leu Pro Leu Val Leu
100 105 110

Pro Ala Val Asn Ala Ala Ala Ala Lys Phe Val Ala Ala Trp Thr Leu
115 120 125

Lys Ala Ala Ala Lys Ala Ala Ala Arg Leu Met Ile Gly Thr Ala Ala
130 135 140

Ala Gly Phe Val Val Ala Leu Ile Pro Leu Val Asn Ala Met Thr Tyr
145 150 155 160

Ala Ala Pro Leu Phe Val Gly Ala Ala Ala Ala Met Ala Leu Leu Arg
165 170 175

Leu Pro Leu Val
180

<210> 270
<211> 543
<212> DNA
<213> Unknown

<220>
<223> TB.1

<400> 270
atgcaggtgc agatccagag cctgtttctg ctctctctgt gggtgcccgg atccagagga 60
aggatgagca gagtgaccac attcactgtc aaggccctgg tgctcctgat gctccccgtc 120
gtgaacctga tgatcggcac cgtgcagcc gtcgtgaaag ctctcgtcct gctcatgtct 180
cctgtgggag cagggctgat gacagccgtg tacctggtcg gcgctgcagc catggccctc 240
ctgcggctgc cagtgaagcg catgtttgct gcaaactctgg gagtcaactc cctctatttc 300
gggggcattt gcgtgggaag gctgcccctc gtgctgacct ctgtgaatgc agccgctgcc 360
aaatttgctc ccgcttggaac tctgaaggca gccgctaagg ccgctgcaag actgatgatc 420
gggaccgccg ctgccggctt cgtggtcgcc ctgattcccc tggatgaacgc catgacatac 480
gcagctctctc tgtttgtggg agccgctgca gccatggctc tcctgagggt gccactgggtg 540
tga 543

<210> 271
<211> 148
<212> PRT
<213> Unknown

<220>

<223> BCL A2 #90

<400> 271

Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Leu Trp Val Pro
1 5 10 15

Gly Ser Arg Gly Ile Met Ile Gly His Leu Val Gly Val Asn Arg Leu
20 25 30

Leu Gln Glu Thr Glu Leu Val Asn Ala Lys Val Ala Glu Ile Val His
35 40 45

Phe Leu Asn Ala Lys Val Phe Gly Ser Leu Ala Phe Val Asn Ala Tyr
50 55 60

Leu Ser Gly Ala Asn Leu Asn Val Gly Ala Ala Tyr Leu Gln Leu Val
65 70 75 80

Phe Gly Ile Glu Val Asn Ala Ala Ala Lys Phe Val Ala Ala Trp Thr
85 90 95

Leu Lys Ala Ala Ala Lys Ala Ala Ala Val Val Leu Gly Val Val Phe
100 105 110

Gly Ile Asn Ser Met Pro Pro Pro Gly Thr Arg Val Asn Ala Ala Ala
115 120 125

Ala Thr Val Gly Ile Met Ile Gly Val Asn Ala Lys Leu Cys Pro Val
130 135 140

Gln Leu Trp Val
145

<210> 272

<211> 447

<212> DNA

<213> Unknown

<220>

<223> BCL A2 #90

<400> 272

atgcaggtgc agatccagag cctgtttctg ctctctctgt ggggtgcccg gtccagagga 60

attatgatcg gccatctggt gggcgtaac agactgctgc aggaaaccga gctgggtgaat 120

gccaaggtgg ccgaaattgt gcactttctc aacgcaaagg tgtttgggtc cctggctttt 180

gtcaatgcct atctgagcgg cgctaacctc aacgtcggag ccgcctacct ccagctgggtc 240

```

ttcggcatcg aggtcaacgc tgctgcaaaa ttcgtggcag cttggaccct caaggctgca      300
gcaaaggctg ccgccgtcgt gctcggagtg gtgttcggga tcaactctat gccacctccc      360
gggactaggg tcaatgctgc cgccgcaaca gtgggaatca tgattggggg gaatgccaaa      420
ctgtgcccag tgcaactgtg ggtgtga                                          447

```

<210> 273
 <211> 144
 <212> PRT
 <213> Unknown

<220>
 <223> BCL A2 #88

<400> 273

```

Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Trp Val Pro
1              5              10              15

```

```

Gly Ser Arg Gly Val Val Leu Gly Val Val Phe Gly Ile Asn Ala Ala
20              25              30

```

```

Ala Ala Lys Phe Val Ala Ala Trp Thr Leu Lys Ala Ala Ala Lys Val
35              40              45

```

```

Ala Glu Ile Val His Phe Leu Asn Ala Tyr Leu Ser Gly Ala Asn Leu
50              55              60

```

```

Asn Val Gly Ala Ala Tyr Leu Gln Leu Val Phe Gly Ile Glu Val Asn
65              70              75              80

```

```

Ile Met Ile Gly His Leu Val Gly Val Asn Arg Leu Leu Gln Glu Thr
85              90              95

```

```

Glu Leu Val Asn Ala Lys Val Phe Gly Ser Leu Ala Phe Val Asn Ala
100              105              110

```

```

Lys Leu Cys Pro Val Gln Leu Trp Val Asn Ala Ala Ala Ala Thr Val
115              120              125

```

```

Gly Ile Met Ile Gly Val Asn Ser Met Pro Pro Pro Gly Thr Arg Val
130              135              140

```

<210> 274
 <211> 435
 <212> DNA
 <213> Unknown

<220>
 <223> BCL A2 #88

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<400> 274
atgcagggtgc agatccagag cctgtttctg ctccctcctgt gggtgcccgg gtccagagga      60
gtcgtgctgg gagtcgtctt cggcattaat gccgccgctg caaagttcgt ggctgcctgg      120
acctgaagg ccgcagctaa agtggcagag atcgtgcact ttctgaacgc ctacctgagc      180
ggagcaaatc tgaacgtcgg cgctgcctat ctgcagctcg tgtttggaat tgaagtgaac      240
atcatgattg gacatctggg gggcgtgaac aggctgctcc aggaaactga gctgggtcaac      300
gctaaagtgt tcgggtctct cgcctttgtg aacgctaagc tctgccccgt ccaactctgg      360
gtcaatgccg cagccgctac agtggggatc atgatcggcg tgaactccat gcctccacca      420
gggaccagag tgtga                                                    435

```

```

<210> 275
<211> 147
<212> PRT
<213> Unknown

```

```

<220>
<223> BCL A2 #63

```

```

<400> 275

```

```

Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Leu Trp Val Pro
1              5              10              15

Gly Ser Arg Gly Lys Leu Cys Pro Val Gln Leu Trp Val Asn Ala Ala
                20              25              30

Ala Ala Thr Val Gly Ile Met Ile Gly Val Asn Ile Met Ile Gly His
          35              40              45

Leu Val Gly Val Asn Arg Leu Leu Gln Glu Thr Glu Leu Val Asn Ala
50              55              60

Lys Val Ala Glu Ile Val His Phe Leu Asn Ala Lys Val Phe Gly Ser
65              70              75              80

Leu Ala Phe Val Asn Ala Tyr Leu Ser Gly Ala Asn Leu Asn Val Gly
          85              90              95

Ala Ala Tyr Leu Gln Leu Val Phe Gly Ile Glu Val Asn Ala Ala Ala
          100              105              110

Lys Phe Val Ala Ala Trp Thr Leu Lys Ala Ala Ala Lys Ala Ala Ala
          115              120              125

Val Val Leu Gly Val Val Phe Gly Ile Asn Ser Met Pro Pro Pro Gly
130              135              140

```

Thr Arg Val
145

<210> 276
<211> 450
<212> DNA
<213> Unknown

<220>
<223> BCL A2 #63

<400> 276
atgcaggtgc agatccagag cctgtttctg ctctctctgt gggtgccccg gtccagagga 60
aagctctgcc ccgtgcaact gtgggtcaac gccgccgccg caaccgtcgg cattatgac 120
gggggtgaaca tcatgatcgg acacctgggc ggcgtgaaca ggctgctgca ggagacagaa 180
ctgggtcaatg ccaaggtggc tgaaattgtc catttcctga atgccaaagt gttcgggtct 240
ctcgctttctg tgaacgctta tctgagcgga gctaacctca acgtgggggc cgcatacctc 300
cagctcgtct ttgggattga ggtgaatgcc gcagctaaat ttgtcgctgc ctggaccctg 360
aaggcagcag ccaaggctgc cgcagtgggtg ctgggagtgg tgtttggaat caattccatg 420
cctccaccag gcactagagt gtgaggatcc 450

<210> 277
<211> 183
<212> PRT
<213> Unknown

<220>
<223> Prostate 1

<400> 277

Leu Thr Phe Phe Trp Leu Asp Arg Ser Val Lys Ala Ala Ala Val Leu
1 5 10 15

Val His Pro Gln Trp Val Leu Thr Val Lys Ala Ala Ala Leu Leu Gln
20 25 30

Glu Arg Gly Val Ala Tyr Ile Lys Ala Ala Leu Leu Leu Ser Ile Ala
35 40 45

Leu Ser Val Asn Pro Leu Val Cys Asn Gly Val Leu Gln Gly Val Lys
50 55 60

Ala Ala Ile Met Tyr Ser Ala His Asp Thr Thr Val Lys Ala Ala Ala
65 70 75 80

Phe Leu Thr Pro Lys Lys Leu Gln Cys Val Asn Ala Met Met Asn Asp

	85		90		95
Gln Leu Met Phe Leu Asn Ala Gly Leu Pro Ser Ile Pro Val His Pro	100		105		110
Val Lys Ala Ala Ala Leu Gly Thr Thr Cys Tyr Val Gly Ala Ala Ile	115		120		125
Leu Leu Trp Gln Pro Ile Pro Val Asn Phe Leu Arg Pro Arg Ser Leu	130		135		140
Gln Cys Val Lys Ala Phe Leu Thr Leu Ser Val Thr Trp Ile Gly Val	145		150		155
Asn Ala Leu Leu Tyr Ser Leu Val His Asn Leu Gly Ala Ala Thr Leu	165		170		175
Met Ser Ala Met Thr Asn Leu	180				

<210> 278
 <211> 648
 <212> DNA
 <213> Unknown

<220>
 <223> Prostate 1

<400> 278	
atgcagggtgc agatccagag cctgtttctg ctctctctgt gggtgcccgg gtccagagga	60
ttgacattttt tttggctgga tagatcgggtt aaggctgcag ccgtgcttgt tcatccccag	120
tgggtcttga ccgtaaaaggc tgccgcgctg ctacaagaaa gaggggtcgc atacatcaaa	180
gctgctctcc tcttgagtat tgcgctaagt gttaaaccgc tagtttgtaa tggggtgtta	240
caagggtgtga aagcggcgat tatgtacagt gcccacgaca ctaccgtaaa agcagccgct	300
ttcttgaccc caaaaaaact ccaatgcgtg aacgcaatga tgaatgatca gctgatgttt	360
ttaaacgctg gcttaccttc tataccgggtt catccagtca aggccgcggc attgggtacg	420
acgtgttatg ttggagcagc gatacttctt tggcagccca taccagtaaa ttttttaaga	480
cctagatcct tacaatgcgt caaagcattc cttacactct cagtaacttg gatcggagtc	540
aatgctctgc tatatagcct cgtacacaac ttgggcgcgg ccacacttat gaggtgcaatg	600
acgaatttag ctaagttcgt ggcggcctgg actctaaagg ccgcagca	648

<210> 279
 <211> 322
 <212> PRT

<213> Human immunodeficiency virus

<400> 279

Met Glu Lys Val Tyr Leu Ala Trp Val Pro Ala His Lys Gly Ile Gly
1 5 10 15

Gly Gly Pro Gly Pro Gly Gln Lys Gln Ile Thr Lys Ile Gln Asn Phe
20 25 30

Arg Val Tyr Tyr Arg Gly Pro Gly Pro Gly Trp Glu Phe Val Asn Thr
35 40 45

Pro Pro Leu Val Lys Leu Trp Tyr Gln Gly Pro Gly Pro Gly Tyr Arg
50 55 60

Lys Ile Leu Arg Gln Arg Lys Ile Asp Arg Leu Ile Asp Gly Pro Gly
65 70 75 80

Pro Gly Gln His Leu Leu Gln Leu Thr Val Trp Gly Ile Lys Gln Leu
85 90 95

Gln Gly Pro Gly Pro Gly Gly Glu Ile Tyr Lys Arg Trp Ile Ile Leu
100 105 110

Gly Leu Asn Lys Ile Val Arg Met Tyr Gly Pro Gly Pro Gly Gln Gly
115 120 125

Gln Met Val His Gln Ala Ile Ser Pro Arg Thr Leu Asn Gly Pro Gly
130 135 140

Pro Gly Ile Lys Gln Phe Ile Asn Met Trp Gln Glu Val Gly Lys Ala
145 150 155 160

Met Tyr Gly Pro Gly Pro Gly Trp Ala Gly Ile Lys Gln Glu Phe Gly
165 170 175

Ile Pro Tyr Asn Pro Gln Gly Pro Gly Pro Gly Lys Thr Ala Val Gln
180 185 190

Met Ala Val Phe Ile His Asn Phe Lys Arg Gly Pro Gly Pro Gly Ser
195 200 205

Pro Ala Ile Phe Gln Ser Ser Met Thr Lys Ile Leu Glu Pro Gly Pro
210 215 220

Gly Pro Gly Glu Val Asn Ile Val Thr Asp Ser Gln Tyr Ala Leu Gly
225 230 235 240

Ile Ile Gly Pro Gly Pro Gly His Ser Asn Trp Arg Ala Met Ala Ser
245 250 255

Asp Phe Asn Leu Pro Pro Gly Pro Gly Pro Gly Ala Glu Thr Phe Tyr
260 265 270

Val Asp Gly Ala Ala Asn Arg Glu Thr Lys Gly Pro Gly Pro Gly Gly
275 280 285

Ala Val Val Ile Gln Asp Asn Ser Asp Ile Lys Val Val Pro Gly Pro
290 295 300

Gly Pro Gly Phe Arg Lys Tyr Thr Ala Phe Thr Ile Pro Ser Ile Asn
305 310 315 320

Asn Glu

<210> 280
<211> 969
<212> DNA
<213> Human immunodeficiency virus

<400> 280
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cctgggcaga aacagatcac caagatccag aacttccggg tatactaccg gggacctggt 120
ccagggttggg agtttgtgaa cacaccaccc ttagtaaagc tctggtacca gggccccggt 180
cccggatacc gtaaaatcct gaggcaaaga aagatagatc gcctcattga tggccccggg 240
ccaggccagc accttctgca gcttacagtg tggggaatta aacagctgca ggggccggg 300
ccgggggggg aaatttataa aagggtggatc attctgggtc tgaacaagat cgtccgcatg 360
tatggccctg gaccgggaca ggggcagatg gtccaccaag caatcagccc tcgaaccttg 420
aatggaccgg gccaggaat caagcaattc attaacatgt ggcaagaagt tggttaaggct 480
atgtacggtc cgggccctgg atgggcaggg ataaaacagg agtttggaat cccttacaat 540
ccccagggtc ctgggccagg taaaacggca gtgcagatgg ccgtgttcat tcataatttt 600
aagcggggcc ctggacctgg cagcccagct atatttcaaa gttcgatgac caaaatcttg 660
gagccccggc cagggccggg cgaagtgaac attgtcacag attctcagta tgccctcggc 720
atcatagggc ccggaccagg gcattccaat tggcgcgcca tggcgtctga ctttaatcta 780
cctcctgggc caggccctgg cgcggaact ttctatgtgg acggcgctgc aaacaggggag 840
actaagggac ccggaccggc cggcgctgta gtcattcagg acaactcaga catcaagggt 900
gttcccggtc caggccccgg gtccagaaag tataccgcct tcactattcc gtccatcaac 960

aatgagtga

<210> 281
 <211> 340
 <212> PRT
 <213> Human immunodeficiency virus

<400> 281

Met Glu Lys Val Tyr Leu Ala Trp Val Pro Ala His Lys Gly Ile Gly
 1 5 10 15

Gly Gly Pro Gly Pro Gly Gln Lys Gln Ile Thr Lys Ile Gln Asn Phe
 20 25 30

Arg Val Tyr Tyr Arg Gly Pro Gly Pro Gly Trp Glu Phe Val Asn Thr
 35 40 45

Pro Pro Leu Val Lys Leu Trp Tyr Gln Gly Pro Gly Pro Gly Tyr Arg
 50 55 60

Lys Ile Leu Arg Gln Arg Lys Ile Asp Arg Leu Ile Asp Gly Pro Gly
 65 70 75 80

Pro Gly Gln His Leu Leu Gln Leu Thr Val Trp Gly Ile Lys Gln Leu
 85 90 95

Gln Gly Pro Gly Pro Gly Gly Glu Ile Tyr Lys Arg Trp Ile Ile Leu
 100 105 110

Gly Leu Asn Lys Ile Val Arg Met Tyr Gly Pro Gly Pro Gly Gln Gly
 115 120 125

Gln Met Val His Gln Ala Ile Ser Pro Arg Thr Leu Asn Gly Pro Gly
 130 135 140

Pro Gly Ile Lys Gln Phe Ile Asn Met Trp Gln Glu Val Gly Lys Ala
 145 150 155 160

Met Tyr Gly Pro Gly Pro Gly Trp Ala Gly Ile Lys Gln Glu Phe Gly
 165 170 175

Ile Pro Tyr Asn Pro Gln Gly Pro Gly Pro Gly Lys Thr Ala Val Gln
 180 185 190

Met Ala Val Phe Ile His Asn Phe Lys Arg Gly Pro Gly Pro Gly Ser
 195 200 205

Pro Ala Ile Phe Gln Ser Ser Met Thr Lys Ile Leu Glu Pro Gly Pro
210 215 220

Gly Pro Gly Glu Val Asn Ile Val Thr Asp Ser Gln Tyr Ala Leu Gly
225 230 235 240

Ile Ile Gly Pro Gly Pro Gly His Ser Asn Trp Arg Ala Met Ala Ser
245 250 255

Asp Phe Asn Leu Pro Pro Gly Pro Gly Pro Gly Ala Glu Thr Phe Tyr
260 265 270

Val Asp Gly Ala Ala Asn Arg Glu Thr Lys Gly Pro Gly Pro Gly Gly
275 280 285

Ala Val Val Ile Gln Asp Asn Ser Asp Ile Lys Val Val Pro Gly Pro
290 295 300

Gly Pro Gly Phe Arg Lys Tyr Thr Ala Phe Thr Ile Pro Ser Ile Asn
305 310 315 320

Asn Glu Gly Pro Gly Pro Gly Ala Lys Phe Val Ala Ala Trp Thr Leu
325 330 335

Lys Ala Ala Ala
340

<210> 282
<211> 1023
<212> DNA
<213> Human immunodeficiency virus

<400> 282
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cctgggcaga aacagatcac caagatccag aacttccggg tatactaccg gggacctggt 120
ccagggttggg agtttgtgaa cacaccaccc ttagtaaagc tctggtacca gggccccggt 180
cccggatacc gtaaaatcct gaggcaaaga aagatagatc gcctcattga tggcccgggc 240
ccaggccagc accttctgca gcttacagtg tggggaatta aacagctgca ggggccgggc 300
cccggggggg aaatttataa aagggtggatc attctgggtc tgaacaagat cgtccgcatg 360
tatggccctg gaccgggaca ggggcagatg gtccaccaag caatcagccc tcgaaccttg 420
aatggaccgg gccaggaat caagcaattc attaacatgt ggcaagaagt tggttaaggct 480
atgtacggtc ccggccctgg atgggcaggg ataaaacagg agtttggaat cccttacaat 540
ccccagggtc ctgggccagg taaaacggca gtgcagatgg ccgtgttcat tcataatttt 600

aagcggggcc ctggacctgg cagcccagct atatttcaaa gttcgatgac caaaatcttg 660
gagcccggcc cagggccggg cgaagtgaac attgtcacag attctcagta tgccctcggc 720
atcatagggc cgggaccagg gcattccaat tggcgcgcca tggcgtctga ctttaatcta 780
cctcctgggc caggccctgg cgcggaaact ttctatgtgg acggcgctgc aaacagggag 840
actaagggac cgggaccgg cggcgctgta gtcattcagg acaactcaga catcaagggtg 900
gttcccggtc caggccccgg gttcagaaag tataccgcct tcactattcc gtccatcaac 960
aatgagggcc cgggcccagg tgccaagtgc gtggctgcct ggaccctgaa ggctgccgct 1020
tga 1023

<210> 283
<211> 75
<212> PRT
<213> Human immunodeficiency virus

<400> 283

Glu Lys Val Tyr Leu Ala Trp Val Pro Ala His Lys Gly Ile Gly Gly
1 5 10 15

Pro Gly Pro Gly Gln Gly Gln Met Val His Gln Ala Ile Ser Pro Arg
20 25 30

Thr Leu Asn Gly Pro Gly Pro Gly Ser Pro Ala Ile Phe Gln Ser Ser
35 40 45

Met Thr Lys Ile Leu Glu Pro Gly Pro Gly Pro Gly Phe Arg Lys Tyr
50 55 60

Thr Ala Phe Thr Ile Pro Ser Ile Asn Asn Glu
65 70 75

<210> 284
<211> 228
<212> DNA
<213> Human immunodeficiency virus

<400> 284
gagaagggtgt acctggcctg ggtgcctgcc cacaagggaa tcggaggacc tggccctgga 60
cagggacaga tgggtcacca ggccatcagc cctaggaccc tgaacggacc tggacctgga 120
agccctgcc tcttccagag cagcatgacc aagatcctgg agcccggacc tggacctgga 180
ttcaggaagt acaccgcctt caccatcccc agcatcaaca acgagtga 228

<210> 285
<211> 276
<212> PRT

<213> Unknown

<220>

<223> PfHTL

<400> 285

Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Leu Trp Val Pro
1 5 10 15

Gly Ser Arg Gly Arg His Asn Trp Val Asn His Ala Val Pro Leu Ala
20 25 30

Met Lys Leu Ile Gly Pro Gly Pro Gly Lys Cys Asn Leu Tyr Ala Asp
35 40 45

Ser Ala Trp Glu Asn Val Lys Asn Gly Pro Gly Pro Gly Lys Ser Lys
50 55 60

Tyr Lys Leu Ala Thr Ser Val Leu Ala Gly Leu Leu Gly Pro Gly Pro
65 70 75 80

Gly Gln Thr Asn Phe Lys Ser Leu Leu Arg Asn Leu Gly Val Ser Glu
85 90 95

Gly Pro Gly Pro Gly Ser Ser Val Phe Asn Val Val Asn Ser Ser Ile
100 105 110

Gly Leu Ile Met Gly Pro Gly Pro Gly Val Lys Asn Val Ile Gly Pro
115 120 125

Phe Met Lys Ala Val Cys Val Glu Gly Pro Gly Pro Gly Met Asn Tyr
130 135 140

Tyr Gly Lys Gln Glu Asn Trp Tyr Ser Leu Lys Lys Gly Pro Gly Pro
145 150 155 160

Gly Gly Leu Ala Tyr Lys Phe Val Val Pro Gly Ala Ala Thr Pro Tyr
165 170 175

Gly Pro Gly Pro Gly Pro Asp Ser Ile Gln Asp Ser Leu Lys Glu Ser
180 185 190

Arg Lys Leu Asn Gly Pro Gly Pro Gly Leu Leu Ile Phe His Ile Asn
195 200 205

Gly Lys Ile Ile Lys Asn Ser Glu Gly Pro Gly Pro Gly Ala Gly Leu
210 215 220

Leu Gly Asn Val Ser Thr Val Leu Leu Gly Gly Val Gly Pro Gly Pro
225 230 235 240

Gly Lys Tyr Lys Ile Ala Gly Gly Ile Ala Gly Gly Leu Ala Leu Leu
245 250 255

Gly Pro Gly Pro Gly Met Arg Lys Leu Ala Ile Leu Ser Val Ser Ser
260 265 270

Phe Leu Phe Val
275

<210> 286
<211> 837
<212> DNA
<213> Unknown

<220>
<223> PfHTL

<400> 286
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agaggaaggc acaactgggt gaatcatgct gtgcccttg ctatgaagct gatcgccct 120
ggaccagga aatgcaacct ctacgcagac agcgctggg agaacgtcaa gaatggcccc 180
ggacctggga aatccaagta taagctcgct acctctgtgc tggcaggcct gctcggacca 240
ggccccggac agacaaattt caaaagcctg ctcagaaacc tgggagtgtc cgaggggcct 300
ggcccaggat ctacggtctt taatgtgggt aactcctcta ttgggtcat catgggacct 360
ggacctgggg tgaaaaatgt cattggccca ttcattgaagg ccgtgtgtgt cgaaggacct 420
gggcctggca tgaactacta tggaaagcaa gaaaattggt acagcctgaa gaaaggccct 480
gggccaggcg gactggctta caagtttgtg gtcccagggg cagccactcc ctatgggcct 540
gggccaggcc ccgattccat ccaggactct ctcaaagaga gccggaaact gaacggacct 600
gggcctggac tgctcatttt ccacatcaat ggcaaaatta tcaagaacag cgagggacct 660
gggccaggcg ccggactgct ggggaacgtg tccaccgtcc tgctcggcgg agtggggccc 720
ggccctggga agtacaagat cgctggaggg atcgaggcg gactggccct cctgggcccc 780
ggaccagga tgcgcaaact ggctattctc tctgtctcca gctttctgtt tgtgtga 837

<210> 287
<211> 9
<212> PRT
<213> Human immunodeficiency virus

<400> 287

Val Leu Ala Glu Ala Met Ser Gln Val

1 5

<210> 288
<211> 9
<212> PRT
<213> Human immunodeficiency virus

<400> 288

Met Thr Asn Asn Pro Pro Ile Pro Val
1 5

<210> 289
<211> 10
<212> PRT
<213> Human immunodeficiency virus

<400> 289

Met Ala Ser Asp Phe Asn Leu Pro Pro Val
1 5 10

<210> 290
<211> 9
<212> PRT
<213> Human immunodeficiency virus

<400> 290

Lys Leu Val Gly Lys Leu Asn Trp Ala
1 5

<210> 291
<211> 9
<212> PRT
<213> Human immunodeficiency virus

<400> 291

Leu Val Gly Pro Thr Pro Val Asn Ile
1 5

<210> 292
<211> 9
<212> PRT
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<400> 292

Ile Leu Lys Glu Pro Val His Gly Val
1 5

<210> 293
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<400> 293

Lys Ala Ala Cys Trp Trp Ala Gly Ile
1 5

<210> 294

<211> 10

<212> PRT

<213> Human immunodeficiency virus

<400> 294

Lys Met Ile Gly Gly Ile Gly Gly Phe Ile
1 5 10

<210> 295

<211> 9

<212> PRT

<213> Human immunodeficiency virus

<400> 295

Arg Ala Met Ala Ser Asp Phe Asn Leu
1 5

<210> 296

<211> 9

<212> PRT

<213> Human immunodeficiency virus

<400> 296

Thr Leu Asn Phe Pro Ile Ser Pro Ile
1 5

<210> 297

<211> 9

<212> PRT

<213> Human immunodeficiency virus

<400> 297

Lys Leu Thr Pro Leu Cys Val Thr Leu
1 5

<210> 298

<211> 9

<212> PRT

<213> Human immunodeficiency virus

<400> 298

Leu Leu Gln Leu Thr Val Trp Gly Ile
1 5

<210> 299

<211> 10
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<400> 299

Ser Leu Leu Asn Ala Thr Asp Ile Ala Val
1 5 10

<210> 300
<211> 9
<212> PRT
<213> Human immunodeficiency virus

<400> 300

Leu Thr Phe Gly Trp Cys Phe Lys Leu
1 5

<210> 301
<211> 9
<212> PRT
<213> Human immunodeficiency virus

<400> 301

Ala Ile Ile Arg Ile Leu Gln Gln Leu
1 5

<210> 302
<211> 9
<212> PRT
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<400> 302

Arg Ile Leu Gln Gln Leu Leu Phe Ile
1 5

<210> 303
<211> 10
<212> PRT
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<400> 303

Gln Met Ala Val Phe Ile His Asn Phe Lys
1 5 10

<210> 304
<211> 11
<212> PRT
<213> Human immunodeficiency virus

<400> 304

Lys Val Tyr Leu Ala Trp Val Pro Ala His Lys

1 5 10

<210> 305
<211> 10
<212> PRT
<213> Human immunodeficiency virus

<400> 305

Lys Ile Gln Asn Phe Arg Val Tyr Tyr Arg
1 5 10

<210> 306
<211> 9
<212> PRT
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<400> 306

Ala Ile Phe Gln Ser Ser Met Thr Lys
1 5

<210> 307
<211> 10
<212> PRT
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<400> 307

Val Thr Ile Lys Ile Gly Gly Gln Leu Lys
1 5 10

<210> 308
<211> 10
<212> PRT
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<400> 308

Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys
1 5 10

<210> 309
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<400> 309

Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys
1 5 10

<210> 310
<211> 10
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<400> 310

Gln Val Pro Leu Arg Pro Met Thr Tyr Lys
1 5 10

<210> 311

<211> 9

<212> PRT

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<400> 311

Val Met Ile Val Trp Gln Val Asp Arg
1 5

<210> 312

<211> 10

<212> PRT

<213> Human immunodeficiency virus

<400> 312

Gln Met Val His Gln Ala Ile Ser Pro Arg
1 5 10

<210> 313

<211> 10

<212> PRT

<213> Human immunodeficiency virus

<400> 313

Tyr Pro Leu Ala Ser Leu Arg Ser Leu Phe
1 5 10

<210> 314

<211> 9

<212> PRT

<213> Human immunodeficiency virus

<400> 314

His Pro Val His Ala Gly Pro Ile Ala
1 5

<210> 315

<211> 9

<212> PRT

<213> Human immunodeficiency virus

<400> 315

Phe Pro Ile Ser Pro Ile Glu Thr Val
1 5

<210> 316

<211> 11
<212> PRT
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<400> 316

Ile Pro Tyr Asn Pro Gln Ser Gln Gly Val Val
1 5 10

<210> 317
<211> 9
<212> PRT
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<400> 317

Ile Pro Ile His Tyr Cys Ala Pro Ala
1 5

<210> 318
<211> 9
<212> PRT
<213> Human immunodeficiency virus

<400> 318

Cys Pro Lys Val Ser Phe Glu Pro Ile
1 5

<210> 319
<211> 9
<212> PRT
<213> Human immunodeficiency virus

<400> 319

Phe Pro Val Arg Pro Gln Val Pro Leu
1 5

<210> 320
<211> 8
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<400> 320

Val Pro Leu Gln Leu Pro Pro Leu
1 5

<210> 321
<211> 10
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<400> 321

Glu Val Asn Ile Val Thr Asp Ser Gln Tyr

1 5 10

<210> 322
<211> 9
<212> PRT
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<400> 322

Phe Arg Asp Tyr Val Asp Arg Phe Tyr
1 5

<210> 323
<211> 10
<212> PRT
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<400> 323

Val Ile Tyr Gln Tyr Met Asp Asp Leu Tyr
1 5 10

<210> 324
<211> 10
<212> PRT
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<400> 324

Val Thr Val Leu Asp Val Gly Asp Ala Tyr
1 5 10

<210> 325
<211> 9
<212> PRT
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<400> 325

Ile Tyr Gln Glu Pro Phe Lys Asn Leu
1 5

<210> 326
<211> 9
<212> PRT
<213> Human immunodeficiency virus

<400> 326

Pro Tyr Asn Thr Pro Val Phe Ala Ile
1 5

<210> 327
<211> 9
<212> PRT
<213> Human immunodeficiency virus

<400> 327

Thr Tyr Gln Ile Tyr Gln Glu Pro Phe
1 5

<210> 328

<211> 10

<212> PRT

<213> Human immunodeficiency virus

<400> 328

Tyr Trp Gln Ala Thr Trp Ile Pro Glu Trp
1 5 10

<210> 329

<211> 9

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<400> 329

Ile Trp Gly Cys Ser Gly Lys Leu Ile
1 5

<210> 330

<211> 9

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<400> 330

Arg Tyr Leu Lys Asp Gln Gln Leu Leu
1 5

<210> 331

<211> 10

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<400> 331

Val Trp Lys Glu Ala Thr Thr Thr Leu Phe
1 5 10

<210> 332

<211> 9

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<400> 332

Ile Tyr Glu Thr Tyr Gly Asp Thr Trp
1 5

<210> 333

<211> 9
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<400> 333

Pro Tyr Asn Glu Trp Thr Leu Glu Leu
1 5

<210> 334
<211> 15
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<400> 334

Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile Val Arg Met Tyr
1 5 10 15

<210> 335
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<400> 335

Trp Glu Phe Val Asn Thr Pro Pro Leu Val Lys Leu Trp Tyr Gln
1 5 10 15

<210> 336
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<400> 336

Gln Lys Gln Ile Thr Lys Ile Gln Asn Phe Arg Val Tyr Tyr Arg
1 5 10 15

<210> 337
<211> 15
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<400> 337

Lys Val Tyr Leu Ala Trp Val Pro Ala His Lys Gly Ile Gly Gly
1 5 10 15

<210> 338
<211> 15
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<400> 338

Gly Glu Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile

1 5 10 15

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<210> 339
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<400> 339

Glu Lys Val Tyr Leu Ala Trp Val Pro Ala His Lys Gly Ile Gly
 1 5 10 15

<210> 340
 <211> 15
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<400> 340

Gln His Leu Leu Gln Leu Thr Val Trp Gly Ile Lys Gln Leu Gln
 1 5 10 15

<210> 341
 <211> 15
 <212> PRT
 <213> Human immunodeficiency virus

<400> 341

Gln Gly Gln Met Val His Gln Ala Ile Ser Pro Arg Thr Leu Asn
 1 5 10 15

<210> 342
 <211> 15
 <212> PRT
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<400> 342

Ser Pro Ala Ile Phe Gln Ser Ser Met Thr Lys Ile Leu Glu Pro
 1 5 10 15

<210> 343
 <211> 16
 <212> PRT
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<400> 343

Ile Lys Gln Phe Ile Asn Met Trp Gln Glu Val Gly Lys Ala Met Tyr
 1 5 10 15

<210> 344
 <211> 15
 <212> PRT
 <213> Human immunodeficiency virus

<400> 344

Phe	Arg	Lys	Tyr	Thr	Ala	Phe	Thr	Ile	Pro	Ser	Ile	Asn	Asn	Glu
1				5					10					15

<210> 345

<211> 15

<212> PRT

<213> Human immunodeficiency virus

<400> 345

His	Ser	Asn	Trp	Arg	Ala	Met	Ala	Ser	Asp	Phe	Asn	Leu	Pro	Pro
1				5					10					15

<210> 346

<211> 15

<212> PRT

<213> Human immunodeficiency virus

<400> 346

Lys	Thr	Ala	Val	Gln	Met	Ala	Val	Phe	Ile	His	Asn	Phe	Lys	Arg
1				5					10					15

<210> 347

<211> 15

<212> PRT

<213> Human immunodeficiency virus

<400> 347

Tyr	Arg	Lys	Ile	Leu	Arg	Gln	Arg	Lys	Ile	Asp	Arg	Leu	Ile	Asp
1				5					10					15

<210> 348

<211> 15

<212> PRT

<213> Human immunodeficiency virus

<400> 348

Trp	Ala	Gly	Ile	Lys	Gln	Glu	Phe	Gly	Ile	Pro	Tyr	Asn	Pro	Gln
1				5					10					15

<210> 349

<211> 15

<212> PRT

<213> Human immunodeficiency virus

<400> 349

Glu	Val	Asn	Ile	Val	Thr	Asp	Ser	Gln	Tyr	Ala	Leu	Gly	Ile	Ile
1				5					10					15

<210> 350

<211> 15
<212> PRT
<213> Human immunodeficiency virus

<400> 350

Ala Glu Thr Phe Tyr Val Asp Gly Ala Ala Asn Arg Glu Thr Lys
1 5 10 15

<210> 351
<211> 15
<212> PRT
<213> Human immunodeficiency virus

<400> 351

Gly Ala Val Val Ile Gln Asp Asn Ser Asp Ile Lys Val Val Pro
1 5 10 15

<210> 352
<211> 10
<212> PRT
<213> Hepatitis C virus

<400> 352

Leu Leu Phe Asn Ile Leu Gly Gly Trp Val
1 5 10

<210> 353
<211> 9
<212> PRT
<213> Hepatitis C virus

<400> 353

Phe Leu Leu Leu Ala Asp Ala Arg Val
1 5

<210> 354
<211> 9
<212> PRT
<213> Hepatitis C virus

<400> 354

Tyr Leu Val Ala Tyr Gln Ala Thr Val
1 5

<210> 355
<211> 10
<212> PRT
<213> Hepatitis C virus

<400> 355

Arg Leu Ile Val Phe Pro Asp Leu Gly Val

1 5 10

<210> 356
<211> 9
<212> PRT
<213> Hepatitis C virus

<400> 356

Asp Leu Met Gly Tyr Ile Pro Leu Val
1 5

<210> 357
<211> 9
<212> PRT
<213> Hepatitis C virus

<400> 357

Trp Met Asn Arg Leu Ile Ala Phe Ala
1 5

<210> 358
<211> 9
<212> PRT
<213> Hepatitis C virus

<400> 358

Val Leu Val Gly Gly Val Leu Ala Ala
1 5

<210> 359
<211> 9
<212> PRT
<213> Hepatitis C virus

<400> 359

His Met Trp Asn Phe Ile Ser Gly Ile
1 5

<210> 360
<211> 9
<212> PRT
<213> Hepatitis C virus

<400> 360

Ile Leu Ala Gly Tyr Gly Ala Gly Val
1 5

<210> 361
<211> 10
<212> PRT
<213> Hepatitis C virus

<400> 361

Tyr Leu Leu Pro Arg Arg Gly Pro Arg Leu
1 5 10

<210> 362

<211> 9

<212> PRT

<213> Hepatitis C virus

<400> 362

Leu Leu Phe Leu Leu Leu Ala Asp Ala
1 5

<210> 363

<211> 9

<212> PRT

<213> Hepatitis C virus

<400> 363

Tyr Leu Val Thr Arg His Ala Asp Val
1 5

<210> 364

<211> 9

<212> PRT

<213> Hepatitis C virus

<400> 364

Lys Thr Ser Glu Arg Ser Gln Pro Arg
1 5

<210> 365

<211> 9

<212> PRT

<213> Hepatitis C virus

<400> 365

Arg Leu Gly Val Arg Ala Thr Arg Lys
1 5

<210> 366

<211> 9

<212> PRT

<213> Hepatitis C virus

<400> 366

Gln Leu Phe Thr Phe Ser Pro Arg Arg
1 5

<210> 367

<211> 10
<212> PRT
<213> Hepatitis C virus

<400> 367

Arg Met Tyr Val Gly Gly Val Glu His Arg
1 5 10

<210> 368
<211> 9
<212> PRT
<213> Hepatitis C virus

<400> 368

Leu Ile Phe Cys His Ser Lys Lys Lys
1 5

<210> 369
<211> 10
<212> PRT
<213> Hepatitis C virus

<400> 369

Gly Val Ala Gly Ala Leu Val Ala Phe Lys
1 5 10

<210> 370
<211> 9
<212> PRT
<213> Hepatitis C virus

<400> 370

Val Ala Gly Ala Leu Val Ala Phe Lys
1 5

<210> 371
<211> 9
<212> PRT
<213> Hepatitis C virus

<400> 371

Leu Gly Phe Gly Ala Tyr Met Ser Lys
1 5

<210> 372
<211> 9
<212> PRT
<213> Hepatitis C virus

<400> 372

Leu Pro Gly Cys Ser Phe Ser Ile Phe

1 5

<210> 373
<211> 9
<212> PRT
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<400> 373

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Val Met Gly Ser Ser Tyr Gly Phe
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Lys Tyr Lys Leu Ala Thr Ser Val Leu
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Ala Leu Gly Thr Thr Cys Tyr Val
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Lys Ala Lys Phe Val Ala Ala Trp Thr Leu Lys Ala Ala Ala Phe Leu
35 40 45

Pro Ser Asp Phe Phe Pro Ser Val Asn Phe Leu Leu Ser Leu Gly Ile
50 55 60

His Leu Tyr Met Asp Asp Val Val Leu Gly Val Gly Leu Ser Arg Tyr
65 70 75 80

Val Ala Arg Leu Phe Leu Leu Thr Arg Ile Leu Thr Ile Ser Thr Leu
85 90 95

Pro Glu Thr Thr Val Val Arg Arg Gln Ala Phe Thr Phe Ser Pro Thr
100 105 110

Tyr Lys Gly Ala Ala Ala Trp Leu Ser Leu Leu Val Pro Phe Val Asn
115 120 125

Ile Pro Ile Pro Ser Ser Trp Ala Phe Lys Thr Pro Ala Arg Val Thr
130 135 140

Gly Gly Val Phe Lys Val Gly Asn Phe Thr Gly Leu Tyr Asn Leu Pro
145 150 155 160

Ser Asp Phe Phe Pro Ser Val Lys Thr Leu Trp Lys Ala Gly Ile Leu
165 170 175

Tyr Lys Asn Val Ser Ile Pro Trp Thr His Lys Gly Ala Ala Leu Val
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Val Asp Phe Ser Gln Phe Ser Arg Asn Ser Ala Ile Cys Ser Val Val
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210 215

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Lys	Ala	Lys	Phe	Val	Ala	Ala	Trp	Thr	Leu	Lys	Ala	Ala	Ala	Phe	Leu				
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Pro	Ser	Asp	Phe	Phe	Pro	Ser	Val	Asn	Phe	Leu	Leu	Ser	Leu	Gly	Ile				
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His	Leu	Tyr	Met	Asp	Asp	Val	Val	Leu	Gly	Val	Gly	Leu	Ser	Arg	Tyr				
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Val	Ala	Arg	Leu	Phe	Leu	Leu	Thr	Arg	Ile	Leu	Thr	Ile	Ser	Thr	Leu				
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Pro	Glu	Thr	Thr	Val	Val	Arg	Arg	Gln	Ala	Phe	Thr	Phe	Ser	Pro	Thr				
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Tyr	Lys	Gly	Ala	Ala	Ala	Trp	Leu	Ser	Leu	Leu	Val	Pro	Phe	Val	Asn				
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Ile	Pro	Ile	Pro	Ser	Ser	Trp	Ala	Phe	Lys	Thr	Pro	Ala	Arg	Val	Thr				
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Tyr	Lys	Asn	Val	Ser	Ile	Pro	Trp	Thr	His	Lys	Gly	Ala	Ala	Leu	Val				
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Val	Asp	Phe	Ser	Gln	Phe	Ser	Arg	Asn	Ser	Ala	Ile	Cys	Ser	Val	Val				
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Arg	Arg	Lys	Ala	Trp	Met	Met	Trp	Tyr	Trp	Gly	Pro	Ser	Leu	Tyr	Lys				
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Lys	Tyr	Thr	Ser	Phe	Pro	Trp	Leu	Leu	Asn	Ala	His	Pro	Ala	Ala	Met				
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Pro	His	Leu	Leu	Lys	Ala	Ala	Ala	Asp	Leu	Leu	Asp	Thr	Ala	Ser	Ala				
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Leu Tyr Asn Ala Ala Ala Arg Phe Ser Trp Leu Ser Leu Leu Val Pro
260 265 270

Phe Asn Ala Ala Ser Trp Pro Lys Phe Ala Val Pro Asn Leu Lys Leu
275 280 285

Thr Phe Gly Arg Glu Thr Val Leu Glu Tyr Lys Ala Leu Ser Leu Asp
290 295 300

Val Ser Ala Ala Phe Tyr Gly Ala Ala Glu Tyr Leu Val Ser Phe Gly
305 310 315 320

Val Trp Gly Ala Ala Leu Met Pro Leu Tyr Ala Cys Ile
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Lys Ala Lys Phe Val Ala Ala Trp Thr Leu Lys Ala Ala Ala Phe Leu
 35 40 45

Pro Ser Asp Phe Phe Pro Ser Val Asn Phe Leu Leu Ser Leu Gly Ile
 50 55 60

His Leu Tyr Met Asp Asp Val Val Leu Gly Val Gly Leu Ser Arg Tyr
 65 70 75 80

Val Ala Arg Leu Phe Leu Leu Thr Arg Ile Leu Thr Ile Ser Thr Leu
 85 90 95

Pro Glu Thr Thr Val Val Arg Arg Gln Ala Phe Thr Phe Ser Pro Thr
 100 105 110

Tyr Lys Gly Ala Ala Ala Trp Leu Ser Leu Leu Val Pro Phe Val Asn
 115 120 125

Ile Pro Ile Pro Ser Ser Trp Ala Phe Lys Thr Pro Ala Arg Val Thr
 130 135 140

Gly Gly Val Phe Lys Val Gly Asn Phe Thr Gly Leu Tyr Asn Leu Pro
 145 150 155 160

Ser Asp Phe Phe Pro Ser Val Lys Thr Leu Trp Lys Ala Gly Ile Leu
 165 170 175

Tyr Lys Asn Val Ser Ile Pro Trp Thr His Lys Gly Ala Ala Leu Val
 180 185 190

Val Asp Phe Ser Gln Phe Ser Arg Asn Ser Ala Ile Cys Ser Val Val
 195 200 205

Arg Arg Lys Glu Tyr Leu Val Ser Phe Gly Val Trp Gly Leu Ser Leu
 210 215 220

Asp Val Ser Ala Ala Phe Tyr Asn Ala Ala Ala Lys Tyr Thr Ser Phe
225 230 235 240

Pro Trp Leu Leu Asn Ala His Pro Ala Ala Met Pro His Leu Leu Lys
245 250 255

Ala Ala Ala Asp Leu Leu Asp Thr Ala Ser Ala Leu Tyr Asn Ser Trp
260 265 270

Pro Lys Phe Ala Val Pro Asn Leu Lys Leu Thr Phe Gly Arg Glu Thr
275 280 285

Val Leu Glu Tyr Lys Ala Ala Trp Met Met Trp Tyr Trp Gly Pro Ser
290 295 300

Leu Tyr Lys Ala Ala Ala Arg Phe Ser Trp Leu Ser Leu Leu Val Pro
305 310 315 320

Phe Gly Ala Ala Ala Leu Met Pro Leu Tyr Ala Cys Ile
325 330

<210> 467

<211> 1002

<212> DNA

<213> Hepatitis B virus

<400> 467

atgggaatgc aggtgcagat ccagagcctg tttctgctcc tcctgtgggt gcccggtcc	60
agaggacaca ccctgtggaa ggccggaatc ctgtataagg ccaagttcgt ggctgcctgg	120
accctgaagg ctgccgcttt cctgcctagc gatttctttc ctagcgtgaa cttectgctg	180
tccctgggaa tccacctgta tatggatgac gtggtgctgg gagtgggact gtccaggtac	240
gtggctaggc tgttctctgct gaccagaatc ctgaccatct ccaccctgcc agagaccacc	300
gtggtgagga ggcaggcctt caccttttagc cctacctata agggagccgc tgccctggctg	360
agcctgctgg tgccctttgt gaatatccct atccctagct cctgggcttt caagacccca	420
gccagggtga cgggaggagt gtttaagggt ggaaacttca ccggcctgta taacctgccc	480
agcgatttct ttcctagcgt gaagaccctg tggaaggccg gaatcctgta caagaatgtg	540
tccatccctt ggaccacaa gggagccgct ctggtggtgg acttttccca gttcagcaga	600
aattcagcaa tttgttcggt ggtgagaaga aaggaatatc ttgtttcatt tggcgtctgg	660
gggctgtcac tggatgtaag tgcggcattt tacaatgccg ccgcaaaata tacaagcttc	720
ccatggctcc taaacgcaca ccagctgca atgccgcatc tactgaaagc agccgctgac	780
ctcttagaca ctgcctccgc tctgtacaac tcttgccca agtttgccgt gcctaattctc	840

aagttgacct tcggtagaga gacagtctta gaatacaaag cggcctggat gatgtggtac 900
 tggggaccct ctctgtataa agccgctgca aggttctcct ggcttagcct tctcgtacca 960
 ttcggagcag ctgccctaatt gcctttgtac gcatgcatct ga 1002

<210> 468
 <211> 295
 <212> PRT
 <213> Hepatitis B virus

<400> 468

Met Gly Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Leu Trp
 1 5 10 15

Val Pro Gly Ser Arg Gly Ser Trp Pro Lys Phe Ala Val Pro Asn Leu
 20 25 30

Lys Ala Ala Ala Ala Lys Phe Val Ala Ala Trp Thr Leu Lys Ala Ala
 35 40 45

Ala Lys Ser Thr Leu Pro Glu Thr Thr Val Val Arg Arg Lys His Pro
 50 55 60

Ala Ala Met Pro His Leu Leu Lys Ala Ala Ala His Thr Leu Trp Lys
 65 70 75 80

Ala Gly Ile Leu Tyr Lys Lys Ala Phe Leu Leu Thr Arg Ile Leu Thr
 85 90 95

Ile Gly Ala Leu Ser Leu Asp Val Ser Ala Ala Phe Tyr Asn Ala Ala
 100 105 110

Ala Lys Tyr Thr Ser Phe Pro Trp Leu Leu Asn Ala Ala Ala Arg Phe
 115 120 125

Ser Trp Leu Ser Leu Leu Val Pro Phe Asn Ala Ala Thr Pro Ala Arg
 130 135 140

Val Thr Gly Gly Val Phe Lys Ala Ala Glu Tyr Leu Val Ser Phe Gly
 145 150 155 160

Val Trp Gly Ala Ala Ala Tyr Met Asp Asp Val Val Leu Gly Val Asn
 165 170 175

Asp Leu Leu Asp Thr Ala Ser Ala Leu Tyr Asn Ala Ala Ala Phe Pro
 180 185 190

His Cys Leu Ala Phe Ser Tyr Met Lys Ala Ala Ala Trp Met Met Trp
195 200 205

Tyr Trp Gly Pro Ser Leu Tyr Lys Ala Ala Ser Ala Ile Cys Ser Val
210 215 220

Val Arg Arg Lys Asn Phe Leu Leu Ser Leu Gly Ile His Leu Asn Ile
225 230 235 240

Pro Ile Pro Ser Ser Trp Ala Phe Lys Ala Ala Trp Leu Ser Leu Leu
245 250 255

Val Pro Phe Val Asn Ala Phe Leu Pro Ser Asp Phe Phe Pro Ser Val
260 265 270

Lys Leu Thr Phe Gly Arg Glu Thr Val Leu Glu Tyr Lys Gln Ala Phe
275 280 285

Thr Phe Ser Pro Thr Tyr Lys
290 295

<210> 469

<211> 888

<212> DNA

<213> Hepatitis B virus

<400> 469

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atgggaatgc aggtgcagat ccagagcctg tttctgctcc tcctgtgggt gcccggtcc      60
agaggatctt ggcctaaatt cgcagtgcc aaccttaaag ccgcggctgc taagttcgta      120
gctgcctgga cactaaaggc cgccgctaag agcacactgc cagagaccac cgtgggtccgg      180
cgaaagcatc cagccgcaat gcccacttg ctcaaagcag ccgcccacac tctttggaag      240
gctgggatat tgtacaagaa agccttcctt ctgaccagga tattaactat cggagctctg      300
tcaactcgacg tttctgctgc cttctacaac gcggcgga aatacactag ctttccatgg      360
ctactcaacg cagccgccag attttcttgg ctatcactac tgggtgccatt taatgcagca      420
acacctgcta gagtgactgg cggcgtcttt aaagcagccg agtacttggt gagctttggc      480
gtctgggggtg cagcggcata tatggatgat gtagtgtag ggggtgaacga cctcctggac      540
acagccagtg cgctgtacaa tgcagctgca ttcccgcatt gcctagcctt cagttatatg      600
aaagcagcag cctggatgat gtggtactgg ggaccgtccc ttataaagc agcttcagca      660
atctgttccg ttgtgaggag aaaaaacttt ttactctccc tcggtattca cctgaacatt      720
cccatccctt cctcatgggc attcaaagcc gcttggtga gtctactcgt acctttcggt      780
aatgcatttc tgcccagcga ctttttcccc tcggtaaaac tgacattcgg acgcgaaaca      840
```


gtccttgaat ataagcaggc cttcacgttc tcaccaacct ataaatga

888

<210> 470

<211> 296

<212> PRT

<213> Hepatitis B virus

<400> 470

Met Gly Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Leu Trp
1 5 10 15

Val Pro Gly Ser Arg Gly Tyr Met Asp Asp Val Val Leu Gly Val Asn
20 25 30

Ala Ala Ala Glu Tyr Leu Val Ser Phe Gly Val Trp Asn Asp Leu Leu
35 40 45

Asp Thr Ala Ser Ala Leu Tyr Gly Ala Ala His Thr Leu Trp Lys Ala
50 55 60

Gly Ile Leu Tyr Lys Lys Ala Phe Leu Pro Ser Asp Phe Phe Pro Ser
65 70 75 80

Val Lys Ala Phe Pro His Cys Leu Ala Phe Ser Tyr Met Lys Ala Ala
85 90 95

Arg Phe Ser Trp Leu Ser Leu Leu Val Pro Phe Asn Ala Ala Ser Trp
100 105 110

Pro Lys Phe Ala Val Pro Asn Leu Lys Ala Ala Ala Gln Ala Phe Thr
115 120 125

Phe Ser Pro Thr Tyr Lys Asn Ala Ala Ala Ser Ala Ile Cys Ser Val
130 135 140

Val Arg Arg Lys Ala Phe Leu Leu Thr Arg Ile Leu Thr Ile Asn Ile
145 150 155 160

Pro Ile Pro Ser Ser Trp Ala Phe Lys Ala Ala Trp Met Met Trp Tyr
165 170 175

Trp Gly Pro Ser Leu Tyr Lys Ala Ala Ala Thr Pro Ala Arg Val Thr
180 185 190

Gly Gly Val Phe Lys Ala Ala Asn Phe Leu Leu Ser Leu Gly Ile His
195 200 205

Leu Asn Leu Thr Phe Gly Arg Glu Thr Val Leu Glu Tyr Lys His Pro
210 215 220

Ala Ala Met Pro His Leu Leu Lys Ala Ala Ser Thr Leu Pro Glu Thr
225 230 235 240

Thr Val Val Arg Arg Lys Trp Leu Ser Leu Leu Val Pro Phe Val Asn
245 250 255

Ala Ala Ala Ala Lys Phe Val Ala Ala Trp Thr Leu Lys Ala Ala Ala
260 265 270

Lys Leu Ser Leu Asp Val Ser Ala Ala Phe Tyr Asn Ala Ala Ala Lys
275 280 285

Tyr Thr Ser Phe Pro Trp Leu Leu
290 295

<210> 471
<211> 891
<212> DNA
<213> Hepatitis B virus

<400> 471
atgggaatgc aggtgcagat ccagagcctg tttctgctcc tcctgtgggt gcccggtcc 60
agaggataca tggatgacgt tgtgttaggc gttaatgcag ccgcagaata tctcgtgtca 120
ttcggcgtct ggaacgacct gttggacct gcatctgctc tgtacgggtgc agcccataacc 180
ctgtggaagg ccggaatcct ctacaaaaag gcattcctac ctacgcactt ttttccttca 240
gtgaaagcct tcccacattg cctagcattc tcgtatatga aagcggctag gttctcatgg 300
cttagtcttc tagtaccttt caatgccgcc tcctggccca aattcgccgt accaaatcta 360
aaagcggccg cgcaggcctt tacattctct ccgacttata aaaatgcagc agcctccgct 420
atgtgtagcg tcgtgcgccg aaaggccttc ctgctaaccg ggattttgac gataaacatc 480
cccatccctt ctacgtgggc tttcaaagca gcatggatga tgtggtactg ggggtcccagc 540
ttatacaaag ctgcggcaac ccagcaaga gtgacagggg gcgtgtttta ggccgccaac 600
ttcctcctga gtctcggaat acacctgaac ttaacctttg ggagagagac agtactggag 660
tataaacacc cagcagctat gccgcacct ctcaaagccg cttcaacact ccagaaaca 720
actgtagtga ggagaaaatg gctctccctg cttgtcccat ttgtcaacgc cgccgcccgt 780
aagtttgtgg ccgcttggaac acttaaggct gcagcaaagt tgtcacttga tgttagtgca 840
gcgttctata acgcagctgc aaaatacact tcctttccct ggctgctgtg a 891

<210> 472

<211> 403
 <212> PRT
 <213> Hepatitis B virus

<400> 472

Met Gly Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Leu Trp
 1 5 10 15

Val Pro Gly Ser Arg Gly Phe Leu Leu Thr Arg Ile Leu Thr Ile Asn
 20 25 30

Ala Ala Ala Ser Trp Pro Lys Phe Ala Val Pro Asn Leu Lys Ala Ala
 35 40 45

Ala His Thr Leu Trp Lys Ala Gly Ile Leu Tyr Lys Lys Ala Asp Leu
 50 55 60

Leu Asp Thr Ala Ser Ala Leu Tyr Asn Gln Ala Phe Thr Phe Ser Pro
 65 70 75 80

Thr Tyr Lys Gly Ala Ala Ala Asn Val Ser Ile Pro Trp Thr His Lys
 85 90 95

Gly Ala Ala Ala Phe Leu Leu Ser Leu Gly Ile His Leu Asn Ile Pro
 100 105 110

Ile Pro Ser Ser Trp Ala Phe Lys Ala Ala Ala Leu Trp Phe His Ile
 115 120 125

Ser Cys Leu Thr Phe Lys Ala Ala Ala Ile Leu Leu Leu Cys Leu Ile
 130 135 140

Phe Leu Leu Asn Ala Ala Ala Tyr Pro Ala Leu Met Pro Leu Tyr Ala
 145 150 155 160

Cys Ile Asn Ala His Pro Ala Ala Met Pro His Leu Leu Lys Ala Ala
 165 170 175

Ala Ser Phe Cys Gly Ser Pro Tyr Lys Ala Ala Gly Leu Ser Arg Tyr
 180 185 190

Val Ala Arg Leu Asn Lys Tyr Thr Ser Phe Pro Trp Leu Leu Asn Phe
 195 200 205

Leu Pro Ser Asp Phe Phe Pro Ser Val Lys Ala Phe Pro His Cys Leu
 210 215 220

Ala Phe Ser Tyr Met Lys Ala Glu Tyr Leu Val Ser Phe Gly Val Trp
225 230 235 240

Asn Ala Ala Leu Thr Phe Gly Arg Glu Thr Val Leu Glu Tyr Lys Ala
245 250 255

Ala Ala Leu Pro Ser Asp Phe Phe Pro Ser Val Lys Ala Tyr Met Asp
260 265 270

Asp Val Val Leu Gly Val Asn Leu Val Val Asp Phe Ser Gln Phe Ser
275 280 285

Arg Asn Ala Ala Ala Arg Trp Met Cys Leu Arg Arg Phe Ile Ile Asn
290 295 300

Ala Ala Arg Phe Ser Trp Leu Ser Leu Leu Val Pro Phe Asn Ala Ala
305 310 315 320

Thr Pro Ala Arg Val Thr Gly Gly Val Phe Lys Ala Ala Trp Leu Ser
325 330 335

Leu Leu Val Pro Phe Val Asn Ser Ala Ile Cys Ser Val Val Arg Arg
340 345 350

Lys Ala Lys Phe Val Ala Ala Trp Thr Leu Lys Ala Ala Ala Lys Trp
355 360 365

Met Met Trp Tyr Trp Gly Pro Ser Leu Tyr Lys Ala Ala Ser Thr Leu
370 375 380

Pro Glu Thr Thr Val Val Arg Arg Lys Leu Ser Leu Asp Val Ser Ala
385 390 395 400

Ala Phe Tyr

<210> 473

<211> 1215

<212> DNA

<213> Hepatitis B virus

<400> 473

atgggaatgc aggtccagat acagagcttg ttcctcctcc tgctttgggt ccccgatca 60

aggggtttcc tcctaaccgc catcctgaca attaacgccg cagcctcctg gccaaaattt 120

gccgtgccaa atctcaaggc agctgcacac acactatgga aagcagggat actgtacaag 180

aaagccgatc tgctagacac agcgtctgcg ttgtacaacc aggcttttac tttctctcct 240

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acatataaag gcgcagctgc aaacgtgagt atcccttgga cgcacaaagg agccgctgcc      300
aacttcttac tgtccctggg catccatcta aatatcccta ttccttcac ctagggcattt      360
aaagcagccg ccttatgggt ccacataagt tgtctgacct tcaaagccgc agcaatcctg      420
ctcctttgcc tcattttctt actaaacgcc gctgcctatc cagctcttat gccattgtac      480
gcatgtatca acgcccaccc cgcagcaatg cccacacctt ttaaagctgc cgccagtttc      540
tgcggttctc cttataaagc agcagggctg tccagatacg tagctaggct aaacaagtat      600
accagcttcc cctggttact taatttcctg ccgtcagatt tctttccatc agttaaggcc      660
ttccctcatt gtctggcctt tagctacatg aaggetgaat atttggtatc cttcggcgtg      720
tggaatgcgg cactgacatt tggaagggag acagtgctcg agtacaaagc cgccgcacta      780
ccctcggact tcttcccatc ggtcaaagct tacatggacg atgtagtcct cggcggttaac      840
ttagtagtgg acttttctca attttccaga aacgcagcgg ccagatggat gtgccttcgg      900
cgttttataa taaacgccgc tcgattcagc tggctatcac tcctagttcc atttaatgca      960
gctacaccgg cacgggtgac aggtggagtt ttcaaggcag cgtggctttc actgcttggtg     1020
ccatttgtga actcagctat ttgctcagta gtgagaagga aggcaaaatt cgtcgtctgcc     1080
tggactctca aagctgccgc aaagtggatg atgtggtatt ggggaccgag cttgtacaaa     1140
gcggcctcta ctctgccaga aactaccgta gtgagaagaa aactgagcct ggacgtcagc     1200
gcggcattct actga                                           1215

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<210> 474
 <211> 403
 <212> PRT
 <213> Hepatitis B virus

<400> 474

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Met Gly Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Leu Trp
1           5           10          15

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Val Pro Gly Ser Arg Gly Phe Leu Leu Ser Leu Gly Ile His Leu Asn
20          25          30

```

```

Ala Ala Ala Lys Tyr Thr Ser Phe Pro Trp Leu Leu Asn Ala Ala Ala
35          40          45

```

```

Arg Phe Ser Trp Leu Ser Leu Leu Val Pro Phe Asn Ala Ala Phe Pro
50          55          60

```

```

His Cys Leu Ala Phe Ser Tyr Met Lys Ala Ala Leu Val Val Asp Phe
65          70          75          80

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-150-

Ser Gln Phe Ser Arg Gly Ala Ile Leu Leu Leu Cys Leu Ile Phe Leu
85 90 95

Leu Asn Ala Ala Ala His Thr Leu Trp Lys Ala Gly Ile Leu Tyr Lys
100 105 110

Lys Ala Trp Met Met Trp Tyr Trp Gly Pro Ser Leu Tyr Lys Ala Tyr
115 120 125

Pro Ala Leu Met Pro Leu Tyr Ala Cys Ile Gly Ala Ala Ala Trp Leu
130 135 140

Ser Leu Leu Val Pro Phe Val Asn Phe Leu Leu Thr Arg Ile Leu Thr
145 150 155 160

Ile Asn Ile Pro Ile Pro Ser Ser Trp Ala Phe Lys Ala Ala Ala Glu
165 170 175

Tyr Leu Val Ser Phe Gly Val Trp Asn Leu Pro Ser Asp Phe Phe Pro
180 185 190

Ser Val Lys Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Lys Asp Leu
195 200 205

Leu Asp Thr Ala Ser Ala Leu Tyr Asn Ser Trp Pro Lys Phe Ala Val
210 215 220

Pro Asn Leu Lys Ala Ala Ala Ser Ala Ile Cys Ser Val Val Arg Arg
225 230 235 240

Lys Leu Ser Leu Asp Val Ser Ala Ala Phe Tyr Asn Ala Ala Ala Lys
245 250 255

Phe Val Ala Ala Trp Thr Leu Lys Ala Ala Ala Lys Ala Ala Asn Val
260 265 270

Ser Ile Pro Trp Thr His Lys Gly Ala Ala Gly Leu Ser Arg Tyr Val
275 280 285

Ala Arg Leu Asn Ala Ala Ala Ser Thr Leu Pro Glu Thr Thr Val Val
290 295 300

Arg Arg Lys His Pro Ala Ala Met Pro His Leu Leu Lys Ala Ala Ala
305 310 315 320

Arg Trp Met Cys Leu Arg Arg Phe Ile Ile Asn Ala Ser Phe Cys Gly
325 330 335

Ser Pro Tyr Lys Ala Ala Tyr Met Asp Asp Val Val Leu Gly Val Asn
340 345 350

Ala Leu Trp Phe His Ile Ser Cys Leu Thr Phe Lys Ala Ala Ala Thr
355 360 365

Pro Ala Arg Val Thr Gly Gly Val Phe Lys Ala Ala Ala Leu Thr Phe
370 375 380

Gly Arg Glu Thr Val Leu Glu Tyr Lys Gln Ala Phe Thr Phe Ser Pro
385 390 395 400

Thr Tyr Lys

<210> 475

<211> 1212

<212> DNA

<213> Hepatitis B virus

<400> 475

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cggggcttct tgcttagctt	gggcatccac	ctaaatgctg	ctgcaaaata	cacatctttt	120
ccttggtctc ttaatgccgc	cgctaggttt	tcatggctga	gtctgctagt	acctttcaat	180
gcggcctttcc cacattgcct	agcttttagc	tatatgaaag	ctgctttagt	cgtggacttt	240
tcacagttta gcagaggagc	aatcctgctg	ctatgtctga	tattccttct	aaacgcagca	300
gcccacacac tctggaaagc	tggtatcctt	tacaagaaag	cctggatgat	gtgggtattgg	360
ggacccagcc tctacaaagc	ataccctgcc	ctgatgccac	tatacgcatg	cattggcgcg	420
gcagcctgggt tatccctttt	agtaccgttt	gtcaactttc	tattaaccag	aatcctgacg	480
attaatatcc cgatcccaag	ttcctgggca	ttcaaagcag	ccgcggagta	tctgggtttca	540
tttggcggtat ggaacctgcc	aagcgacttc	tttccttctg	ttaagttcct	cccctccgat	600
ttctttccat cggtgaaaga	cctccttgat	accgcgagcg	ctctgtacaa	ctcgtggcca	660
aaattcgcag ttccaaacct	aaaagccgcc	gccagtgcc	tttgttccgt	ggtaaggaga	720
aaattatcac tcgacgtgtc	cgcagcattt	tataacgctg	ctgcaaagtt	tgtcgcagca	780
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gcagccgggc tgtctaggta	tgtggcgagg	ctaaacgccg	ccgcctcaac	actgcctgag	900
actactgtcg tgagacgcaa	acaccctgcc	gcaatgcccc	acctgctgaa	agcagccgca	960
cgatgggatgt gcctcagaag	attcataata	aacgcttctt	tctgtgggtc	accctacaaa	1020
gccgcttaca tggacgatgt	ggtcctcgga	gtgaatgccc	tctgggtcca	tatcagctgc	1080

ctgacattca aggcagccgc ccccccgct cgtgtgacag gaggtgtctt caaagccgcg 1140
 gcactgactt tccgtcggga aactgtattg gaataataagc aggccttcac attctcccca 1200
 acatacaagt ga 1212

<210> 476
 <211> 410
 <212> PRT
 <213> Hepatitis B virus

<400> 476

Met Gln Val Gln Ile Gln Ser Leu Phe Leu Leu Leu Trp Val Pro
 1 5 10 15

Gly Ser Arg Gly Phe Leu Leu Ser Leu Gly Ile His Leu Asn Ala Ala
 20 25 30

Ala Lys Tyr Thr Ser Phe Pro Trp Leu Leu Asn Ala Ala Ala Arg Phe
 35 40 45

Ser Trp Leu Ser Leu Leu Val Pro Phe Asn Ala Ala Phe Pro His Cys
 50 55 60

Leu Ala Phe Ser Tyr Met Lys Ala Ala Leu Val Val Asp Phe Ser Gln
 65 70 75 80

Phe Ser Arg Gly Ala Ile Leu Leu Leu Cys Leu Ile Phe Leu Leu Asn
 85 90 95

Ala Ala Ala His Thr Leu Trp Lys Ala Gly Ile Leu Tyr Lys Lys Ala
 100 105 110

Trp Met Met Trp Tyr Trp Gly Pro Ser Leu Tyr Lys Ala Tyr Pro Ala
 115 120 125

Leu Met Pro Leu Tyr Ala Cys Ile Gly Ala Ala Ala Trp Leu Ser Leu
 130 135 140

Leu Val Pro Phe Val Asn Phe Leu Leu Thr Arg Ile Leu Thr Ile Asn
 145 150 155 160

Ala Ala Ala Ile Pro Ile Pro Ser Ser Trp Ala Phe Lys Ala Ala Ala
 165 170 175

Glu Tyr Leu Val Ser Phe Gly Val Trp Asn Leu Pro Ser Asp Phe Phe
 180 185 190

Pro Ser Val Lys Ala Ala Ala Phe Leu Pro Ser Asp Phe Phe Pro Ser
195 200 205

Val Lys Ala Ala Ala Asp Leu Leu Asp Thr Ala Ser Ala Leu Tyr Asn
210 215 220

Ser Trp Pro Lys Phe Ala Val Pro Asn Leu Lys Ala Ala Ala Ser Ala
225 230 235 240

Ile Cys Ser Val Val Arg Arg Lys Leu Ser Leu Asp Val Ser Ala Ala
245 250 255

Phe Tyr Asn Ala Ala Ala Lys Phe Val Ala Ala Trp Thr Leu Lys Ala
260 265 270

Ala Ala Lys Ala Ala Asn Val Ser Ile Pro Trp Thr His Lys Gly Ala
275 280 285

Ala Gly Leu Ser Arg Tyr Val Ala Arg Leu Asn Ala Ala Ala Ser Thr
290 295 300

Leu Pro Glu Thr Thr Val Val Arg Arg Lys His Pro Ala Ala Met Pro
305 310 315 320

His Leu Leu Lys Ala Ala Ala Arg Trp Met Cys Leu Arg Arg Phe Ile
325 330 335

Ile Asn Ala Ser Phe Cys Gly Ser Pro Tyr Lys Ala Ala Tyr Met Asp
340 345 350

Asp Val Val Leu Gly Val Asn Ala Leu Trp Phe His Ile Ser Cys Leu
355 360 365

Thr Phe Lys Ala Ala Ala Thr Pro Ala Arg Val Thr Gly Gly Val Phe
370 375 380

Lys Ala Ala Ala Leu Thr Phe Gly Arg Glu Thr Val Leu Glu Tyr Lys
385 390 395 400

Gln Ala Phe Thr Phe Ser Pro Thr Tyr Lys
405 410

<210> 477

<211> 1239

<212> DNA

<213> Hepatitis B virus

<400> 477

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atgggaatgc aggtgcaaat acagtctctc ttcccttttgc ttctctgggt tccaggatca      60
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ccttggtctc ttaatgccgc cgctagggtt tcatggctga gtctgctagt acctttcaat      180
gcggtcttcc cacattgcct agcttttagc tatatgaaag ctgctttagt cgtggacttt      240
tcacagttta gcagaggagc aatcctgctg ctatgtctga tttccttct aaacgcagca      300
gcccacacac tctggaaagc tggatccctt tacaagaaag cctggatgat gtggtattgg      360
ggacccagcc tctacaaagc ataccctgcc ctgatgccac tatacgcatg cattggcgcg      420
gcagcctggt tatccctttt agtaccgttt gtcaactttc tattaaccag aatcctgacg      480
attaatgctg ccgccattcc gatcccaagt tcctgggcat tcaaagcagc cgcgaggtat      540
ctggtttcat ttggcgtagt gaacctgcca agcgacttct ttccttctgt taaggccgct      600
gctttcctcc cctccgattt ctttccatcg gtgaaagccg ctgccgacct ccttgatacc      660
gcgagcgctc tgtacaactc gtggccaaaa ttgcgagttc caaacctaaa agccgccgcc      720
agtgccattt gttccgtggt aaggagaaaa ttatcactcg acgtgtccgc agcattttat      780
aacgctgctg caaagtttgt cgcagcatgg acattgaagg ctgcagcgaa agcagcaaat      840
gtatcaatac cctggacca caaggggtgca gccgggctgt ctaggtatgt ggcgaggcta      900
aacgccgccg cctcaacact gcctgagact actgtcgtga gacgcaaaca cctgccgca      960
atgccccacc tgctgaaagc agccgcacga tggatgtgcc tcagaagatt cataataaac     1020
gcttctttct gtgggtcacc ctacaaagcc gcttacatgg acgatgtggt cctcggagtg     1080
aatgccctct ggttccatat cagctgcttg acattcaagg cagccgccac ccccgctcgt     1140
gtgacaggag gtgtcttcaa agccgcggca ctgactttcg gtcgggaaac tgtattggaa     1200
tataagcagg ccttcacatt ctccccaaca tacaagtga                                1239

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<210> 478
 <211> 344
 <212> PRT
 <213> Hepatitis B virus

<400> 478

Met Gly Thr Ser Phe Val Tyr Val Pro Ser Ala Leu Asn Pro Ala Asp
 1 5 10 15

Gly Pro Gly Pro Gly Leu Cys Gln Val Phe Ala Asp Ala Thr Pro Thr
 20 25 30

Gly Trp Gly Leu Gly Pro Gly Pro Gly Arg His Tyr Leu His Thr Leu
 35 40 45

Trp Lys Ala Gly Ile Leu Tyr Lys Gly Pro Gly Pro Gly Pro His His
50 55 60

Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu Leu Met Thr Leu
65 70 75 80

Ala Gly Pro Gly Pro Gly Glu Ser Arg Leu Val Val Asp Phe Ser Gln
85 90 95

Phe Ser Arg Gly Asn Gly Pro Gly Pro Gly Pro Phe Leu Leu Ala Gln
100 105 110

Phe Thr Ser Ala Ile Cys Ser Val Val Gly Pro Gly Pro Gly Leu Val
115 120 125

Pro Phe Val Gln Trp Phe Val Gly Leu Ser Pro Thr Val Gly Pro Gly
130 135 140

Pro Gly Leu His Leu Tyr Ser His Pro Ile Ile Leu Gly Phe Arg Lys
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Ile Gly Pro Gly Pro Gly Ser Ser Asn Leu Ser Trp Leu Ser Leu Asp
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Val Ser Ala Ala Phe Gly Pro Gly Pro Gly Leu Gln Ser Leu Thr Asn
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Leu Leu Ser Ser Asn Leu Ser Trp Leu Gly Pro Gly Pro Gly Ala Gly
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Phe Phe Leu Leu Thr Arg Ile Leu Thr Ile Pro Gln Ser Gly Pro Gly
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Pro Gly Val Ser Phe Gly Val Trp Ile Arg Thr Pro Pro Ala Tyr Arg
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Pro Pro Asn Ala Pro Ile Gly Pro Gly Pro Gly Val Gly Pro Leu Thr
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Val Asn Glu Lys Arg Arg Leu Lys Leu Ile Gly Pro Gly Pro Gly Lys
260 265 270

Gln Cys Phe Arg Lys Leu Pro Val Asn Arg Pro Ile Asp Trp Gly Pro
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Gly Pro Gly Ala Ala Asn Trp Ile Leu Arg Gly Thr Ser Phe Val Tyr
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Val Pro Gly Pro Gly Pro Gly Lys Gln Ala Phe Thr Phe Ser Pro Thr
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